# CHAPTER 1

# INTRODUCTION

The Rhode Island Comprehensive Planning and Land Use Act of 1988 requires an inventory of the existing and forecasted needs for community facilities and services, as follows:

1. Solid Waste Management;
2. Sewage Collection, Disposal and Treatment;
3. Water Service; and
4. Stormwater Management Facilities;
5. Fire Department;
6. Police Department;
7. Emergency Management;
8. School Department;
9. Libraries;
10. Recreation Department;
11. Department of Economic and Community Development;
12. Department of Public Works;
13. City Assessor; and
14. Sanitation Division

**Public Works Facilities and Services**

The Public Works Facilities and Services are vital systems in a community because they are essential to public health and they contribute significantly to the quality of life of residents. Each have intermunicipal attributes and therefore require a larger perspective than that gained from within the four walls of the community. The discussion herein describes these services within their present day context and within the context of existing and planned programs that are designed to improve the capital facilities and the delivery of services.

Future community needs that have been identified through the land use plan and the preparation of "build out" analyses, may exceed the existing and planned capacities of these service delivery systems and the community infrastructure. In the instances where these needs can be quantified and programmed for action, the short and long-term implementation programs address them. There are other significant needs where the programmatic level of plan refinement must wait for detailed systems planning or project planning. In these cases, goals and policies are offered to direct the municipality on decisions involving these services and facilities, land use, development, and the expenditure of tax dollars for planning and public works.

The citizen survey conducted in conjunction with the preparation of the 1986-1991 Land Use Plan found the presence or absence of community services and facilities affects citizen attitudes

about the city. The following tabulation by neighborhood, shown in Table 1, reveals that public services are perceived as assets to the community in some neighborhoods, while the lack of good stormwater management facilities was frequently cited as an issue of concern or a problem.

Warwick is a relatively young city that has experienced considerable population growth during the last 5 decades. Within the past fifty years, significant national technological and economic changes have been reflected in the suburban development of Warwick. In some instances, the City did not keep pace with certain trends such as community-wide sewer system development. In other instances, Warwick has been a leader, such as the effort to manage the solid waste stream.

Municipal sewers service approximately forty percent of Warwick's residences. Past municipal policy has been to install city sewers on a priority basis for critical areas. The Jefferson Boulevard industrial area, being located closest to the municipal wastewater treatment facility was one of the first sections of the city to be serviced. The system has gradually expanded by radiating out from the treatment facility to service areas of highest need as funding has allowed.

**Table 1**
**1986 - 1991 Land Use Plan**
**Neighborhood Facilities & Services Issues and Assets**

| Neighborhood | Issue – Stormwater Management | Asset - Public Services |
|---|---|---|
| Lakewood, Pawtuxet, Gaspee | 27% | 42% |
| Hillsgrove, Norwood | 20 | -- |
| Spring Green, Pilgrim Park | -- | 26 |
| Governor Francis, Gaspee Plateau | 33 | -- |
| Greylawn | -- | -- |
| Hoxie | 30 | 37 |
| Conimicut | 54 | -- |
| Longmeadow | 51 | -- |
| Warwick Neck | 48 | -- |
| Oakland Beach | 40 | 47 |
| Meadowbrook and Old Warwick | 32 | -- |
| Greenwood East | -- | 32 |
| Wildes Corners | 22 | -- |
| Buttonwoods | 14 | -- |
| Apponaug, Nausauket, Arnolds Neck | -- | -- |
| Greenwood | 21 | 50 |
| Cowesett | 29 | -- |
| Bald Hill | 20 | -- |
| Pontiac, Natick | 38 | -- |
| Potowomut | 44 | -- |
| City Wide | 25 | -- |

Source: 1986-1991 Land Use Plan, Citizen Survey.

Sewer service is also provided to western sections of the City along Quaker Lane, Centerville Road, Tollgate Road, New London Avenue and in the Natick section through the terms of intermunicipal agreements between Warwick and the Town of West Warwick. Most of the connections in Warwick to the West Warwick regional wastewater treatment facility have occurred through individual private agreements with the Town of West Warwick. Most of the reserve capacity of 291,000 gallons per day for the City of Warwick remains available. The Natick section is not sewered even though sufficient reserve capacity is available at West Warwick's facility.

In addition to participating in the state recycling program, The City of Warwick has a waste oil collection system operated at the Department of Public Works, and is preparing to operate a yard waste composting program. The City's goal is to achieve a 25 percent reduction in the volume of solid waste trucked to the state landfill.

Water service is available throughout the city. Warwick's water distribution system is owned, operated and maintained by the City Water Department, except for the areas of the City west of Apponaug and the Cowesett section which are served by the Kent County Water Authority. Water supply primarily is from the Scituate Reservoir, however the Kent County Water Authority draws from wells, one of which is in the Hunt River Aquifer in Warwick.

Many sections of the City experience drainage problems as a result of topography and development that occurred without adequate attention to stormwater management. The City has recently adopted policies that relate to pavement limitations, site design and stormwater management, which cover new and future development. Older sections of the City can only benefit from advances in stormwater management by retrofitting.

# CHAPTER 2

# COMMUNITY PROFILE AND NEEDS ANALYSIS

## Solid Waste Management

The City Sanitation Department was privatized in 1992 by way of a competitive bid process. As a result, a private contractor (Truk-Away) operates a city-wide solid waste collection program. Trash is collected once a week and is hauled to the Truk-Away transfer station at Jefferson Boulevard, and from the transfer station to the Central Landfill in Johnston. The sanitation contract is due to expire in 1997 with a total cost to the City of $5,094,083.

Warwick was one of the first communities to go on-line with a state mandated solid waste recycling program. Mandatory recycling began in December of 1989. Participation in the program has been running at about 80 percent, a fairly high rate compared to other communities in the state. The City's recyclable waste is also handled by Truk-away. Curb-side pickup of recyclables including glass (all colors), plastic milk bottles, plastic soda bottles, tin and aluminum cans and newspapers is conducted five days a week by the contractor's seven trucks. These materials are transported directly to the recycling facility located at the Johnston landfill. It is estimated that 17 percent of the City's waste, normally deposited at the landfill, is now diverted to the recycling facility. Just as is the case with the sanitation contract, the City's recycling contract with Truk-Away expires in 1997. The total cost of the five year recycling program is $2,344,854.

The City currently has a recycling coordinator who is responsible for the program as well as the development of other programs which are designed to more effectively deal with the City's solid waste. As a result, Warwick's recycling program has been extended to the school system and the City's municipal housing complexes.

Finally, a very successful city-wide composting program was initiated by the City in July of 1993. The compost facility is located behind the Mickey Stevens Sports Complex on Sandy Lane. The composting program, which provides scheduled curbside pickup as well as drop off service, was credited with removing approximately 5,700 tons of yard waste from the waste stream in its first year.

## Sewage Collection, Disposal and Treatment

**Municipal System Overview and Description**
Approximately 40 percent of the City of Warwick is sewered. Of the 35,000 residential units in the city, approximately 10,000 (29%) are connected to the system and an additional 4,000 could tie in but have not yet done so. The municipal wastewater treatment facility is located on the Pawtuxet River at 300 Service Avenue, just west of interstate Route I-95 between exits 13 and 14, in the Hillsgrove area.

The wastewater treatment facility is one of three municipal facilities that discharges its effluent, currently treated to the secondary level, into the Pawtuxet River. The river is one of the most polluted waterways in Rhode Island.

There are approximately 85 miles of sanitary sewers in the City. None of the City's sewers are combined sanitary and storm sewers. The capacity of the interceptor line is 15 million gallons. The wastewater treatment facility has an average daily flow capacity of 5.2 million gallons/day (mgd) which is intended to meet the City's wastewater needs through the year 2003, and it is designed to accept and treat a peak hourly flow of 14.5 million gallons/day. The average daily flow measured over the past year has been 3.7 mgd. Of this total, 40.9 percent is from commercial/industrial sources, 57.7 percent from residential and 1.4 percent from infiltration or inflow.

The secondary treatment facilities are in the final stage of a $17 million upgrading project which started in 1984. The completion of this project will bring the facility to a state-of-the-art level for the secondary treatment process. Funding has been from a 1985 sewer bond and the final expenditure is included in the 1991-2006 Capital Improvements Program for the fiscal 1990-1991 year.

In addition to the 85 miles of sewers noted above, the system includes eighteen publicly owned and operated and fifteen private sewage pump stations. The public stations are operated and maintained by the Warwick Sewer Authority (WSA). The oldest (20 years) and largest of these stations (Spring Green) is scheduled in the Capital Improvements Program for a $600,000 rehabilitation in fiscal year 1991-92 to replace antiquated equipment and to enable the station to handle new flow from the expanding sewer service area.

The growth of the sewer system has followed the recommendations of the Wastewater Facilities Plan (WWFP) completed by C.E. Maguire, Inc. in 1979, which gave priority to areas with on-site disposal problems and was approved in 1981. The WWFP made the following findings:

1. That Warwick's overall system, which included not only a public collection and disposal system that handled about 15 percent of the populace but also about 25,000 privately-owned individual on-site disposal systems, was far less than satisfactory, with widespread overflows of the private systems already being experienced and even more likely to occur in the future.

2. That future growth of new population to be served was a much smaller problem than repairing existing deficiencies.

3. That there is not enough water in the Pawtuxet River to dilute and carry away Warwick's wastewater, even after treatment, if all the failing systems were to be tied into the public sewer system, except at extremely high costs.

4. That the 5,000 square foot or larger single family house lots that constitute the majority of Warwick's built up land appears to create an opportunity for rehabilitating individual on-site sewage disposal systems, especially since there are no potable water sources dependent on Warwick's groundwater.

5. That rehabilitation of the on-site systems, wherever feasible, coupled with public sewers in the relatively limited areas in which it is not feasible, appears to be the most cost-effective solution to Warwick's wastewater problems and to place the least stress on the Pawtuxet River.

Thus, areas with marginal or failing on-site systems have been sewered.

Portions of western Warwick are connected to the Town of West Warwick regional wastewater treatment facility in accordance with agreements between the Town and the City, dating to 1980 and 1983. Those agreements assigned a percentage of the treatment facility's capacity to the City of Warwick for service in the Pontiac-Natick and the Cowesett sections of the City along Quaker Lane, Centerville Road, New London Avenue, Tollgate Road. The percentage of capacity allocated also determined the percentage of cost sharing assumed by Warwick. The West Warwick facility is

currently being expanded to a capacity of 7.89 mgd and Warwick's share is 291,000 gd based on the intermunicipal agreement of July 5, 1983 which established Warwick's share at 3.69 percent of the total capacity of the treatment facility.

Future addition of customers to the Warwick Municipal Sewer System is expected primarily from new tie-ins in areas already sewered and from new developments approved but not yet completed. Current average daily flows of 3.7 mgd will be increased by an estimated 0.92-mgd to 4.61 mgd by the additions noted above. This leaves 0.39 mgd for growth through system expansion to reach the current wastewater treatment facility capacity of 5.2 mgd. The Warwick Sewer Authority (WSA) is operating under the framework of a five-year work plan (1991-1995) dated March 1, 1990, which points out the WSA's concern about financial limitations on continued expansion pursuant to the WWFP. The five-year plan identified seven areas to be sewered. These are:

1. Gaspee;
2. Lakewood North and South;
3. Hoxsie East;
4. Hoxsie North;
5. Conimicut;
6. Bayside; and
7. Southeast Shore of Warwick Cove.

In November 1990, Warwick voters approved an $8.0 million bond referendum to continue development of the municipal sewer system. The top priority is the Conimicut/Bayside area. However, the high cost estimated for this work has delayed any action plan.

Therefore, the priority area next to be served is Lakewood South and Gaspee which has been split into two phases. Phase I is estimated to cost $4,000,000 for design and construction and will commence in 1991. This phase will provide sewer service to those areas of Gaspee and Lakewood north and south of Narragansett Parkway. Phase II is estimated at a cost of $2.2 million for design and construction and will continue the Phase I work on both sides of the Parkway. The Phase II design work will commence once the limits of Phase I are fully established in design. Construction of Phase II will commence upon completion of Phase I construction.

The third area scheduled for design only is Lakewood north in the area of the "Presidential streets" east and west of Warwick Avenue, north of Posnegansett Pond, and the area between Post Road and Warwick Avenue. Design only is also

scheduled for Hoxsie East and Hoxsie North off Warwick Avenue north of the School Administration Building and on both sides of Airport Road near Hoxsie Four Corners. Design of sewers in the neighborhood of the southeast shore of Warwick Cove is pending the outcome of private development plans for the area which were approved with the requirement that the sewers be installed by the developer.

Construction of two projects that have been designed is also scheduled to begin in 1991. These are the extension of the Cedar Swamp Force Main along Airport Road at an estimated cost of $400,000, and the Spring Green Pump Station Rehabilitation at an estimated cost of $600,000.

Some areas of the City are not planned for sewers by the 1981 Wastewater Facilities Plan. These areas include Cowesett, Natick, and Potowomut. The Comprehensive Plan Advisory Task Force members and Sewer Authority personnel recognized that these areas also have on-site disposal problems and thus, suggested that sewering alternatives should be studied. Cowesett is an area with high groundwater and poorly drained soils. As an older developed area, in part, many of the on-site disposal systems have aged and do not reflect current design practices. Natick is also an older area and is characterized by small house lots and aging on-site systems. The Potowomut area has high ground water and poorly drained soils in some sections. It too is an older developed area and it is in part located over the Hunt River groundwater aquifer, which can be adversely affected by on-site disposal.

**Rate Structure**

There are currently 650 commercial and industrial accounts and 6,800 residential accounts representing 10,600 residential housing units. Commercial/industrial users are billed based on 100 percent of water usage at $16.83 per 1,000 cuft. The minimum billing is $159.85 per unit, which equals the average annual residence charge. Residential customers are billed at $41.15/unit plus 85 percent of water usage at $14.70/1,000 cuft.

Where sewers are available, residences are charged an assessment of $30.00/foot of frontage payable over 20 years at 8.5 percent interest. This charge is made whether or not the residence is connected. Homeowners are not obligated to connect to the sewers. Those who do not are not required to pay the sewer use fee. For large lots

(1 or more acres) the assessment is based on a complicated formula to account for development potential.

The issue of mandatory connections has arguments for and against. The arguments against include adverse financial burdens on the elderly and others that own property with properly functioning on-site systems. The arguments for include water quality impacts from nitrates and other substances that occur even when an on-site disposal system is properly working. This is an issue that cannot be resolved within the context of the Comprehensive Plan, but should be addressed by the Wastewater Facilities Plan now being prepared.

**Current Wastewater Facilities Planning Program**

The Rhode Island Department of Environmental Management in 1989 found the three communities of Warwick, West Warwick, and Cranston, all of whom have wastewater treatment facilities that discharge treated sanitary wastes into the Pawtuxet River, to be in violation of their new Pollutant Discharge Elimination Permits. These set strict limits on the discharge of metals, nitrogen, phosphorous and other materials that are not attainable with the existing advanced secondary treatment facilities. The Department entered into "consent decrees" with each community, directing them to develop a plan and a program to achieve the allowable limits of discharges.

The City of Warwick retained Beta Engineering, Inc. to prepare a plan and program in accordance with the State Order. This plan will update the 1979 Wastewater Facilities Plan prepared by C.E. Maguire, Inc. The scope of work is extensive and includes the following tasks:

- Estimate future flows for the design year 2015;
- Identify inflow and infiltration into the City's sewer system;
- Analyze non-point pollution sources to the Pawtuxet River;
- Evaluate advanced (tertiary) treatment to remove phosphorus and nitrogen;
- Evaluate effluent disinfection alternatives;
- Evaluate alternative methods of treatment and disposal;
- Evaluate regional options for tertiary treatment and for outfall locations; and,
- Evaluate sludge management options.

The findings and recommendations of the study and the costs associated with the plan may have

an effect on community development and the current five-year work program.

**Greenwich Bay Reclamation Plan**

In December 1992, the Rhode Island Department of Environmental Management (RIDEM) temporarily closed Greenwich Bay due to high levels of fecal coliform. Realizing the importance of environmental protection and the benefits associated with the use and enjoyment of this coastal resource, including shellfishing, the City drafted a "Greenwich Bay Reclamation Plan" (Department of Planning, August, 1993) which has as its focus the following:

- Assessment of physical conditions existing in and around Greenwich Bay;
- Impacts of these conditions on Bay water quality;
- Areas of concern which contribute most to pollutant loading of neighboring water bodies;
- Recommendations to remediate existing problems.

The study discusses twenty-three subareas in terms of physical characteristics, population and housing density, and marine activity. As a result of the study, areas of greatest concern were identified. These areas include portions of Arnold's Neck, Chepiwanoxet, Nausauket, Buttonwoods, Oakland Beach and Warwick Neck. The study also included a discussion of the roles and responsibilities of the institutional stakeholders in the Greenwich Bay water quality cleanup effort. A series of recommendations addressed wastewater management, database management, research and development, communications, coastal management, land use management and plan enforcement.

**Individual Sewage Disposal Systems**

Since only 29 percent of residences are currently connected to the sewer system, 71 percent, or approximately 24,000 residences, utilize on-site individual sewage disposal systems (ISDS). While the long-term plan is to replace many of these by extending the sewers, system failures in unsewered neighborhoods are remedied by homeowners. The City has some grant and loan programs available for this purpose through the on-site repair program. The current Capital Improvements Program includes $300,000 divided equally over the next three fiscal years for this purpose.

Alteration and rehabilitation of ISDS installations is a major ongoing effort in the City of Warwick. During the five-year period, 1985 through 1989, a total of 1,932 applications for individual sewage disposal systems were filed with the Department of Environmental Management from the City of

Warwick. Of these, 617 or 32 percent were for ISDS repairs and/ or alterations.

Members of the Comprehensive Plan Advisory Task Force made particular note of the fact that many of the older neighborhoods, including those scheduled in the short and long range sewer system expansion program, are characterized by small house lots, poorly drained soils, and antiquated on-site wastewater disposal systems. Engineers familiar with these areas of the City through their involvement in on-site repair designs, frequently cite the poor soil conditions and inadequate land area as major inhibiting factors that prevent full rehabilitation of failed septic systems. A thorough analysis of septage disposal and ISDS repair and alteration frequencies is required to identify neighborhoods and locations of the City where the incidence of pumping and/or failure demonstrate a need for sewers. This analysis should also examine groundwater contamination in the Hunt River aquifer and the feasibility of extending sewers where needed to prevent groundwater contamination from on-site systems. Once areas are identified they can be assigned a priority and be scheduled if funding is available. The analysis and assignment of priorities should be accomplished through the Wastewater Facilities Plan that is now being updated.

The Warwick Wastewater Treatment Facility currently accepts septage from licensed haulers only. In 1994, the fee was $43.00 per 1,000 gallons of septage plus an odor control charge of $4.00 per 1,000 gallons to cover the cost of potassium formangenate. Septage is accepted only from Warwick residents, and each load is monitored for compliance with City standards to prevent damage to the treatment facility's processes. There is a 25,000 gallons per day cap on septage discharges at the Wastewater Treatment Facility. Monthly averages in 1989 were 488,000 gallons of septage per month. The total for 1989 was approximately 5.85 million gallons. According to treatment facility personnel, the 25,000-gallon cap is now reached on a daily basis often before noon. The City of Cranston will accept Warwick septage at a cost of $60.00 per 1000 gallons.

If connections to the sewer system were mandatory there would be added flows to the treatment plant of non-septage waste and reduced septage flows. Mandatory connections would also reduce the strength of the effluent going to the treatment facility, thereby improving the treatment process.

**Industrial Wastewater Pretreatment**

Warwick has an industrial pretreatment program whose goal is to prevent the release into the wastewater stream of those metal and organic pollutants that will interfere with the WWTF's operation, contaminate the resulting sludge, or pass through the treatment process untreated. A staff of three persons manages the program and it focuses especially on electroplating and precious metal industries that typically can release heavy metals and cyanide into the waste stream. There currently are 403 permitted businesses in Warwick regulated by the pretreatment program. These include 192 industrial/commercial users, 191 restaurants and 20 septage haulers. Of these 403 businesses, 13 are considered significant users because of their potential to discharge metals and other materials that will damage the treatment facility's processes.

The City's Sewer Authority personnel monitor the wastewater stream on a 24-hour per day basis to assure that metals in excess of permitted levels are not loading the wastewater stream. When monitoring detects elevated levels of metals the Sewer Authority personnel can track the contaminants to the source if there is a continuous discharge. Since 1986 the pretreatment program has decreased the volume of metals in the waste stream from 1.86 mg/l to .50 mg/l, for a reduction of nearly 70 percent.

The individual companies in the significant user category are required to self-monitor and submit monthly reports to the Sewer Authority. Noncompliance to the pretreatment program results in fees and fines levied on the violator. The fines range from $500.00 to $5,000.00 per violation and system failures at the source must be corrected. From September 1, 1989 to August 31, 1990, the City levied fines totaling $54,000. The most significant fines were for septage haulers that were illegally discharging into the sewer system. The Sewer Authority personnel are otherwise satisfied that the significant users and others are very cooperative.

Expansion of the pretreatment program is envisioned by the Sewer Authority to encompass photo processing and auto-body industries and businesses that utilize organic chemicals. In order to monitor for organics, the Authority should have gas chromatography equipment.

**Marina Sewage Pump Out Facilities**

Warwick has evolved in recent decades as one of

the most popular recreational boating marina areas in the state. The City's shoreline is comprised of eight sheltered coves some of which are ideal for marina development, and Pawtuxet Cove, Warwick Cove, Apponaug Cove and Greenwich Cove in particular have been improved for boating through the dredging of channels and mooring areas by the U.S. Army Corps of Engineers. Private marina development is extensive in these four coves.

An inventory of marina slips conducted in 1990 by the City counted a total of 2,750 vessel slips and 774 moorings in the City's coves. A total of 1,622 boats in the inventory are 25 feet or greater in length. The presence of these boats poses a potential water quality problem because of the possible discharge of sanitary wastes directly into the water, especially from the boats in the 25-foot and class which are generally outfitted with marine toilets.

The Rhode Island Department of Environmental Management, which is responsible for establishing and monitoring water quality classifications and discharge standards, has initiated the implementation of rules and regulations strictly governing the density of recreational boats in the state's coastal waters. In order to meet these standards, boats 25 feet or greater in length will be required to have sealed holding tanks for their marine toilets and pump out facilities will be necessary to pump the sanitary wastes from these vessels.

To meet state water quality requirements in those coves with high densities of recreational boats 25 feet or greater in length, three marine sanitary pump out facilities are planned by the City to be constructed by 1996 at the following locations for an estimated total cost of $280,000.

| | Cove/Waterbody | Location | Estimated Cost | Year |
|---|---|---|---|---|
| 1. | Apponaug Cove | Municipal Dock at Arnold's Neck | $40,000 | 1994 |
| 2. | Greenwich Cove | Location to be established; considering a possible co-share or lease at a marina | $80,000 | 1995 |
| 3. | Warwick Cove | Municipal Dock at Suburban Parkway | $160,000 | 1996 |

A fourth facility is being considered for Pawtuxet Cove at the municipal dock. This will cost an estimated $30,000 and is proposed as a co-share with the City of Cranston. Construction of the Pawtuxet Cove facility is planned to occur upon completion of the other three. All facilities will be connected to the municipal sewer system. Design and operations details for the connections will have to be approved by the Sewer Authority, which is concerned about the injection of formaldehyde into the wastewater stream. Temporary holding tanks and testing of the wastewater may be required.

## Water Service

### Supply

Water is supplied to Warwick by the Providence Water Supply Board (PWSB) through two metered connections and by the Kent County Water Authority (KCWA) through a single connection. The Providence Water Supply Board (PWSB) is the primary regional water supply agency in Rhode Island, operating the Philip J. Holton Water Purification Facilities at the Scituate Reservoir and a system of aqueducts and supply mains which supply water to the most densely populated area of the state, including Warwick. The Kent County Water Authority (KCWA) is a regional water supplier based on Main Street, West Warwick. The Authority supplies water to the western area of Warwick as well as to East Greenwich, West Warwick, a southwestern area of Cranston, and eastern Coventry.

Some of the KCWA water is obtained from the PWSB through the Warwick water distribution system. The Authority's supply sources are the Scituate Reservoir and wells in Coventry and one well in Warwick.

The well in Warwick draws groundwater from the Hunt River Aquifer and is located in the vicinity of one well operated by the Town of North Kingstown and two operated by the Rhode Island Port Authority near East Greenwich and North Kingstown, off Post Road. The well is active and the Water Authority draws from 200,00 to 576,000 gallons per day. The well has been trouble free according to Water Authority Officials. However, during recent years nitrate levels in the groundwater have caused concern among public officials, and one of the Port Authority wells reportedly has shown chemical contamination. The wells are located in an area that has experienced increased development over the last two decades. This has prompted the Towns of North Kingstown and East Greenwich, the City of Warwick, the Kent County Water Authority, and the Rhode Island Port Authority to commission a "wellhead" study of this aquifer and these wells to provide the basis for a protection plan for this resource.

Water from the 2 PWSB connections and the KCWA connection is distributed to the 24,616 services within the City through 347 miles of piping ranging in size from 6-in. to 42-in. in diameter. Two concrete storage tanks provide distribution system storage for the major portion of the system with a combined total storage volume of 12.0 million gallons. A 0.5 million gallon elevated steel tank provides storage for the southeast portion of the City known as Warwick Neck. A State Street booster pumping station that takes suction from the main service areas pipe network during periods of maximum demand or low system pressure supplies this area at times.

The amount of water available is generally greater than the demand, and its use is limited only by the capacity of the distribution-piping network. The major deficiency in the distribution system is inadequate transmission main carrying capacity. Although the condition of old unlined cast iron pipe is for the most part good; much is undersized and insufficient to carry the required flows to the extremities of the system. The number of dead ends and 6-inch pipe compounds the problem in the system.

When the State Street pumping station in Warwick Neck is operating it's 1200 GPM pump, it creates a pressure drop throughout the eastern side of the system which primarily affects the neighborhoods in Planning Districts 1, 2 and 3 north of the booster station. This problem will be considerably reduced by modifications to the station, which are now being designed. The

modifications include the addition of two new 250 GPM pumps that will be activated on demand from the distribution system in Warwick Neck. These pumps will allow the City Water Department to temporarily deactivate the Warwick Neck Water Storage Tank for internal repair and maintenance while continuing to maintain system water pressure and supply. Once the water storage tank is back on-line, the smaller pumps will continue to respond to pressure and supply demand up to their rated capacity. Only when demand exceeds the capacity of the smaller pumps, will the 1200 GPM pump be activated. It is estimated that 80 to 90 percent of the State Street booster station demand will be for the smaller pumps.

**Planned Improvements**

**City Water Department** - A detailed report on improvements to the City's water distribution system was completed in December 1988 by Camp Dresser & McKee Inc. of Providence, RI This report includes a recommended improvement program. The program consists of the construction of $7.3 million of specific new water mains, as well as an annual water main replacement program, upgrading the preventive maintenance program, a public education program to promote water conservation techniques and computerization of the water department facilities. Some specifics from the report are as follows:

- Wherever possible, dead end mains should be tied to other mains (i.e., looped). This provides multiple directions of supply, which improves water quality, supply pressures and system reliability.
- When the 6-inch pipe is replaced, it should be replaced with a minimum 8-inch diameter main.
- The City should use the water distribution system computer model developed for this study to evaluate the system in localized areas where development is proposed. Improvements required providing the City and/or the developer should install adequate fire protection.
- The City should require all new water mains to be a minimum of 8 inch diameter cement-lined ductile iron pipe.
- Where looping is not possible, dead end mains should be equipped with a hydrant and flushed at least semi-annually to maintain quality and carrying capacity.

The current Capital Improvement Program allocates $6,000,000 equally spread over the next three fiscal years 1991-1992, 1992-1993, and 1993-1994 for water main improvements. The areas noted in the CIP are as follows:

1. The northeast portion of the City in the vicinity of the intersection of Post Road and Warwick Avenue,
2. The lower areas of Warwick Neck,

3. The area east of Warwick Avenue,
4. And a portion of the industrial area off of Jefferson Blvd.

The City Water Department is in the process of developing a Demand Management Plan with the help of Siegmund & Associates, an outside consultant. This plan will build on the ADL and CDM studies and provide the proactive and reactive tools necessary to effectively control the City's present and projected demand for potable water. When completed in 1994, this management plan will function as an element of the City's Municipal Comprehensive Plan.

## Kent County Water Authority (KCWA)

The KCWA has adopted a 5-year Capital Improvement Program that calls for four major transmission/ distribution improvements to its system in the Cowesett section of Warwick. These are shown in Table 2.

**Rates**

The City of Warwick Water Department has created the following rates for water use in 1994:

- $94.50/first 10,000 cuft. of water
- $80.00/per 10,000 cuft. in excess of the 1st 10,000 cuft.

New Kent County Water Authority rates were approved by the Rhode Island Public Utilities Commission (PUC). These rates, which have not officially been enacted by the Water Authority, are substantially less than requested and effectively prevent the authority from implementing it's Capital Improvement Program in the City of Warwick. The Authority will be filing another rate increase request with the PUC in 1991, and its approval is necessary to get the Capital Improvements Program back on track. Without the increase, the Authority cannot obtain the financing that is necessary to make the improvements.

**Table 2**
**Kent County Water Authority**
**5-Year Capital Improvement Program**
**Improvements for Warwick 1988-1993**

| Project | Estimated Cost | Estimated Construction Date |
|---|---|---|
| 1. Post Road from Bayview to Division Street 12-inch line extension 2,800 LF replace 6-inch line for loop improvement. | $223,600 | April 1992 |
| 2. Love Lane from Cedar St. to Cowesett Road 12-inch line extension 6,800 LF to replace 8-inch line. | $570,000 | April 1991 – October 1991 |
| 3. Major Potter Road from Hedgerow to Love Lane 1,000 LF of 10-inch line to replace 8-inch line. | $83,200 | April 1993 |
| 4. Cowesett Road replacement of 3,000 LF of 8-inch asbestos cement pipe with ductile iron pipe. | $342,000 | April 1993 |

## Stormwater Management Facilities

### System Overview

Stormwater runoff in the City of Warwick is managed through a combination of methods, which reflect the period in which they were developed. Existing facilities are mapped on plat and lot maps at the Department of Public Works. Some of the City's drainage is handled through "sheet flow" to the roadside where overland flow occurs or swales and ditches receive the water and transport it to wetlands, ponds and streams. In some neighborhoods, the gutter flow is eventually collected by catchbasins at a convenient elevation and location, and piped to an outlet structure.

In the older neighborhoods that developed before the advent of the Rhode Island Freshwater Wetlands Act of 1971, closed drainage systems were installed with outlet pipes that were of sufficient size to handle the runoff from the specific project at that time. Over the years, subsequent development with new drainage connections occurred, so now the original outlet pipes are unable to adequately handle the added

flows. Some of the older neighborhoods have subdrainage systems beneath the streets and on private property that have deteriorated and have become clogged. These areas were subdrained because of high groundwater levels and the failure of the subdrains creates water problems for homes and roadways.

The City of Warwick now has a policy of zero net increase in runoff from new development. Zero net increase means that the rate and volume of runoff from a site that is newly developed cannot exceed the rate and volume of runoff from the site before it was developed. To accomplish the objective of zero net increase in runoff, developers are required to construct stormwater management facilities that will collect and detain the flows of stormwater. These facilities typically include surface detention basins which collect runoff and meter it out into drainage ways and streams at rates that do not exceed preconstruction conditions. From a water quality perspective, drainage detention basins are important facilities for the removal of surface runoff pollutants. The Department of Public Works City Engineering Office maintains a list of all existing and proposed detention basins constructed in the City, and there currently are 45 such structures either in operation or in design. It is the City's policy that these basins be fenced if there will be more than two feet of standing water in the basin after a storm.

**Facility Maintenance and Improvements**

The Department of Public Works implements a maintenance program that cleans existing manholes and catchbasins on an annual basis. There are three men assigned to perform this work and to construct drainage improvements. The priorities for improvements are established through the review and analysis of drainage problems by the Director of Public Works and the City Engineer and are based on the following factors:

1. Threat to public safety such as icing or severe ponding so as to cause traffic accidents;

2. Threat to public health such as through basement flooding so as to contribute to disease, fire, electric shock, or other injurious events;

3. Threat to property such as through flooding of yards and dwellings resulting in damage or loss of personal and real property;

4. Adverse impacts on aesthetics such as severe ponding and puddling of muddy water and debris;

5. General nuisance such as slow draining systems; and

6. Volume and frequency of complaints.

Information on drainage problems is collected through resident's complaints, first hand observation by the City Engineer's office, and occasionally through neighborhood questionnaires developed by the City Engineer's office. The Department of Public Works and the City Engineering staff survey the City's streets and records the general condition of the pavement and the drainage systems. This information is utilized along with that collected for specific problems and utilized to prepare the Capital Improvement Program.

Record keeping is extensive at the City Engineer's office and consists of street maps, subdivision plans, plat and lot maps, card files on every street and computerized data. Not all of the information on the municipal infrastructure is computerized nor is there a computerized map base. There is no master plan for drainage system improvements in the City. Information obtained through interviews with City Engineering personnel highlight the following areas and drainage problems in Warwick:

- Greenwood - inadequate collection system.
- Gaspee and Governor Francis Farms - lack of collection systems, failing subsurface drains and high groundwater problems;
- Cowesett - lack of collection systems, high groundwater problems, and unmanaged stormwater runoff into Hardig Brook;
- Pontiac - unmanaged stormwater runoff from Cranston;
- Wildes Corner - maintenance of stormwater flows through natural drainage areas;
- Hoxsie/Old Warwick - maintenance of stormwater flows through natural drainage areas and high groundwater;
- Warwick Neck - high groundwater;
- Norwood - inadequate collection system.

Drainage retention basins are a relatively new phenomenon in the City of Warwick. As collection and temporary impoundment sites for large volumes of water, these structures become vegetated with wetland plant species and develop wetland habitat values. They also collect sand, silt, trash and debris and over time may become choked with vegetative growth and organic debris similar to the way mosquito ditches become clogged. The basins also can become mosquito breeding areas if they do not drain properly between storms. The City has ownership and

control over the basins constructed as part of residential subdivisions while basins associated with commercial sites are controlled by the owner. Because these basins can develop wetland values, their maintenance may be complicated by regulation by the Rhode Island Department of Environmental Management and the Army Corps of Engineers.

The Department of Public Works at one time maintained a special crew of employees whose responsibility it was to keep the natural drainage ways and brooks clear of excess vegetation and debris to enhance stormwater flows. This was especially important since developing neighborhoods of the city discharged their drainage into these brooks and streams. Maintenance of these natural features has not kept pace with the need, and the Wetlands and Coastal Resources Management Program elaborate and lengthy permit processes are viewed as impediments to the proper maintenance of natural systems that have historically been relied on as drainage ways. These permit processes also regulate the maintenance of manmade structures associated with the natural drainage ways.

Maintenance of the city drainage systems constitutes a significant portion of the budget for Warwick. The annual operating budget for this work is $100,000. In addition to this, in 1989, a bond referendum was approved by the voters for $1.5 million in local street and drainage improvements. The City's 1991-2006 Capital Improvements Program for drainage improvements through 1993 is presented in Table 3. This work often occurs in conjunction with maintenance and repair of city streets also performed by the Department of Public Works.

**Table 3**
**Capital Improvements Program for Drainage Facilities 1990-1993**
**City of Warwick**

| 1990-91 | 1991-92 | 1992-93 |
|---|---|---|
| $600,000 | $600,000 | $700,000 |

## Buildout Impact Analysis

### Solid Waste Management

The City of Warwick currently generates approximately 58.98 pounds of solid waste per household per week or 1.53 tons per year. Of this total, 10.44 pounds per household per week or .27/ton per year is recycled. The yearly cost to the City to collect this nonrecyclable refuse curbside is $77.88 and the recyclable material is $22.85 per household. The state now subsidizes the recycling program and the cost to the city now is $14.88 per household per year. However, the subsidy program ends in December 1991, at which time the recycling cost will be fully borne by the city. The total cost of solid waste collection curbside will then be $100.73 per household per year.

Based on the new residential development estimated in the buildout analysis, the city will incur solid waste collection costs for each additional single family residence. These costs are expected by the Department of Public Works to increase 7 percent annually. The distribution of these costs for the year 2000 residential buildout, increased 7 percent annually between 1990 and the year 2000, are shown in Table 4. These figures represent approximately a 25 percent increase over the total expenditures in 1990.

### Sewage Collection, Disposal and Treatment

The buildout to year 2000 extends beyond the scheduled completion date of the current wastewater facilities planning process. That process is expected to refine considerably the future demands on the municipal sewer system. The current buildout assumes that all new construction in Planning Districts 1 through 5, which now are partially sewered, will be serviced by municipal sewers, shown in Table 5. This is the "worst case" scenario in terms of assessing the impact of development on the capacity of the system. The system's capacity limitation is the 5.2 MGD wastewater treatment facility which is

currently operating at 3.7 MGD.

Utilizing a planning standard of 100 gallons per day per person, a standard that accounts for all non-residential sewage as well as residential flows, the total year 2000 new demand is estimated to be 471,300 gallons per day. This total represents 31 percent of the total available capacity at the municipal treatment facility, and is only a 13 percent increase over current demand.

**Table 4**
**Buildout Impact Analysis**
**Year 2000 New Residential Curbside**
**Solid Waste Collection Costs by Planning District**

| **Planning District** | **New Residential Units Year 2000** | **Year 2000 Additional Cost of Curbside Collection & Recycling** |
|---|---|---|
| D-1 | 415 | $ 76,845 |
| D-2 | 522 | 96,570 |
| D-3 | 559 | 103,415 |
| D-4 | 371 | 68,635 |
| D-5 | 97 | 17,945 |
| D-6 | 338 | 62,530 |
| D-7 | 492 | 91,020 |
| D-8 | 141 | 26,085 |
| **Total** | 2,935 | $543,045 |

Source: City of Warwick Comprehensive Plan Buildout Analysis, "Land Use Supplement" Draft, October 1990

The analysis assumes that Planning Districts 6, 7 and 8 which are now predominantly unsewered will remain so during the decade. New residential developments in these districts will be served by on-site sewage disposal systems, which if properly maintained will be pumped out every third year. In a"worse case" scenario, this will add 2,330 new septic systems that will contribute septage to the wastewater treatment facility. The addition of these systems to the City's inventory of on-site disposal systems is expected to be offset by older homes in Planning Districts 1

through 5 connecting to the municipal sewer system as a result of system expansion.

**Water Service**

The new residential water service demand that will develop between 1990 and the year 2000 will be regulated by the stringent building code requirements for water conservation plumbing.

Various rules of thumb have, in the past, estimated residential water consumption at 100 gallons per capita per day. The latest estimates for Rhode Island, prepared for the recent Water Supply Analysis for the State of Rhode Island, by the Arthur D. Little consulting firm, places domestic water consumption at 42 gallons per capita per day.

Assuming that the stringent code requirements are enforced, the total new demand for water by the year 2000 for residential users will be 295,806 gallons per day, which is only a 1.5 percent increase over current demand. This estimate, shown in Table 6, does not include commercial and industrial uses which are difficult to estimate because of the unknown mix of these activities and the wide range of water consumption that can be experienced from them. For instance, a general office building will require an estimated .093 gallons of water per day per square foot of office space while a medical office will require nearly seven times that amount or .618 gallons per day per square foot.

**Table 5**
**Buildout Impact Analysis**
**Year 2000 New Sewer System Demand**
**by Planning District**

| Planning District | Year 2000 Population Increase (1) | Year 2000 New Sewer Service Demand GPD (2) | Service Provider | Percent Increase Over Current Systemwide Demand (3) |
|---|---|---|---|---|
| D-1 | 995 | 99,500 | City/ISDS | .0269 |
| D-2 | 1,252 | 125,200 | City/ISDS | .0338 |
| D-3 | 1,341 | 134,100 | City/ISDS | .0362 |
| D-4 | 891 | 89,100 | City/ISDS | .0241 |
| D-5 | 234 | 23,400 | City/ISDS | .0063 |
| Subtotal | | 471,300 | | 4.1273 |
| D-6 | 812 | 81,200 | ISDS | ----- |
| D-7 | 1,180 | 11,800 | ISDS | ----- |
| D-8 | 338 | 33,800 | ISDS | ----- |
| **Total** | 7,043 | 598,100 | | |

Notes:

1 City of Warwick Comprehensive Plan Buildout Analysis, "Land Use Supplement" Draft, October 1990.

2 Estimates of sewage generation for residential and non-residential development varies. For planning purposes 100 gpd per person is used by sanitary engineers to estimate total sewage generation from an area.

3 Assumes that the municipal sewer system is utilized in all cases in Districts 1 through 5. Municipal sewers are of limited availability or simply not available in Districts 6, 7 and 8 where ISDS is assumed to be utilized because there are no plans for the city to expand sewers in these areas.

4 This total represents 31 percent of the total available capacity at the Municipal Treatment Facility.

**Table 6**
**Buildout Impact Analysis**
**Year 2000 New Residential Water Service Demand**
**by Planning District**

| Planning District | Year 2000 Population Increase (1) | Year 2000 New Residential Demand GPD (2) | Service Provider | Percent Increase Over 1989 Systemwide Demand (3) |
|---|---|---|---|---|
| D-1 | 995 | 41,790 | City | .0040 |
| D-2 | 1,252 | 52,584 | City | .0050 |
| D-3 | 1,341 | 56,322 | City | .0054 |
| D-4 | 891 | 37,422 | City | .0036 |
| D-5 | 234 | 9,828 | City | .0009 |
| D-6 | 812 | 34,104 | KCWA | .0035 |
| D-7 | 1,180 | 49,560 | KCWA | .0051 |
| D-8 | 338 | 14,196 | City | .0014 |
| **Total** | **7,043** | **295,806** | | **.0148** |

Notes:

1 City of Warwick Comprehensive Plan Buildout Analysis, "Land Use Supplement" Draft, October 1990.

2 Based on new units constructed in conformance with 1990 plumbing codes; total domestic consumption is estimated at 42 gallons per capita per day, From Arthur D. Little Water Supply Analysis for the State of Rhode Island, Exhibit 9, Draft Report to the Rhode Island Water Resources Coordinating Council, December, 1989.

3 City - City of Warwick Water Department; KCWA = Kent County Water Authority.

4 Arthur D. Little, Average Daily Demand City 10.3 MGD; KCWA 9.7 MGD.

Another rule of thumb, which is very conservative, is to estimate use at 150 gallons per day per capita to account for residential, commercial and industrial. The estimated usage is based on the City's historic allotment from the Providence Water Supply Board. While the agreement establishing this allotment expired in 1968, the City and PWSB have continued to honor the terms of this agreement in the absence of any

subsequent agreement regarding allocations. If this per capita estimate is used, it results in a significantly higher demand by the year 2000 than simply accounting for the new residential population growth. The 150 gallons per day per capita estimate includes residential use which represents 40 percent of the total, as shown on Table 7. Assuming the same ratio still applies, the 42 gallons per day per capita residential use estimated by Arthur D. Little, Inc. for Rhode Island for post 1990 construction will result in a total new residential, commercial and industrial water demand of 105 gallons per day per capita. Table 8 shows that this will result in additional demand of nearly 750,000 gpd or approximately a 4 percent increase citywide. The impact on the Kent County Water Authority is a 2.2 percent increase over current system demand and for the City Water Department it is a 5 percent increase in demand.

**Table 7**
**Per Capita Water Consumption Per Day**
**(Traditional Estimate)**

| User Group | Gallons per day (GPD) |
|---|---|
| Domestic | 60 |
| Industrial | 32 |
| Commercial | 21 |
| Public | 15 |
| Loss & Waste | 22 |
| Total | 150 |

Source: Steel, Ernest W., Water Supply and Sewage, McGraw-Hill, 1960.

The Arthur D. Little Water Supply Analysis for the State of Rhode Island, draft, 1989 report, determined that the central section of Rhode Island, which includes Warwick, will have the most significant unmet water supply needs by the year 2010, but that moderate supply and moderate demand and system management will eliminate projected shortfalls. The most important demand management options are aggressive leak detection and repair programs, aggressive sanitary device retrofit programs, technical and financial support for

water saving investments by non-domestic users, guidelines for water service area expansions, and systematic drought management. The most important supply options locally available are aggressive supply protection and reactivation and modest supply augmentation through local groundwater source development.

**Table 8**
**Buildout Impact Analysis**
**Year 2000 Total Estimated New**
**Water Service Demand by Planning District**

| **Planning District** | **Year 2000 Population Increase (1)** | **Year 2000 New Presidential Demand GPD (2)** | **Percent Increase Of 1989 Systemwide Demand (3)** |
|---|---|---|---|
| D-1 | 995 | 104,475 | .0101 |
| D-2 | 1252 | 131,460 | .0128 |
| D-3 | 1341 | 140,700 | .0137 |
| D-4 | 891 | 93,555 | .0091 |
| D-5 | 234 | 24,570 | .0024 |
| D-6 | 812 | 85,260 | .0088* |
| D-7 | 1180 | 123,900 | .0128* |
| D-8 | 338 | 35,490 | .0034 |
| **Total** | **7043** | **739,410** | **.0397** |

Notes:

1 City of Warwick Comprehensive Plan Buildout Analysis, "Land Use Supplement" Draft, October 1990.

2 Based on an estimated total residential, commercial, and industrial demand of 105 gallons per day (GPD) per capita, based on the Arthur D. Little estimate of 42 GPD for domestic use.

3* Primary service provider is the Kent County Water Authority, all others are serviced by the City Water Department. Average daily demand for Kent County Water Authority is 9.7 MGD; for the City Water Department 10.3 MGD.

# CHAPTER 3

# DEVELOPMENT STRATEGY AND IMPLEMENTATION PROGRAM

1. Consider development and implementation of a Development Impact fee system to assist the city financially to maintain and develop public infrastructure and facilities.
2. Develop and maintain a computerized map base and data storage and retrieval system for the municipal sewer, water and stormwater management and drainage systems.

**Solid Waste Management**

1. Continue the City of Warwick's participation in the statewide curbside collection and recycling program and expand the recycling program to condominiums to reduce the flow of solid waste to landfill operations.
2. Continue the waste oil collection and recycling program to reduce and eventually eliminate the improper disposal of waste oil.
3. Support the Department of Public Works program for yard waste composting, beginning with the leaf composting pilot project and expanding to other yard wastes as space and costs allow.
4. Assist residents in the development of home composting of yard wastes (leaves, grass clippings, and the like) through dissemination of educational materials.
5. Identify a permanent site for composting, adequate to meet the needs of the leaf composting project and an expanded yard waste program, with sufficient land area and buffer zones from residential and other land uses.
6. Encourage the Department of Environmental Management and the Solid Waste Management Corporation to increase the opportunity for residents to properly dispose of potentially hazardous household wastes such as paint, pesticides, herbicides, drain cleaners, and the like.
7. Work with the Solid Waste Management Corporation and the Department of Environmental Management to identify alternative disposal options to satisfy

solid waste disposal needs after the State Central Landfill at Johnston reaches capacity and closes.

**Wastewater Management**

1. Continue to expand the sewer service areas of the City to those neighborhoods where small house lots, shallow depth to groundwater, and soil conditions have resulted in significant failure of old cesspools and individual sewage disposal drain fields. The sections of the city that are scheduled next for sewer improvements are: (1) Gaspee, (2) Lakewood North and South, (3) Hoxsie East, (4) Hoxsie North, (5) Conimicut, (6) Bayside, and (7) the Southeast Shore of Warwick Ave.
2. Maintain and expand as necessary the industrial pretreatment program to include commercial and industrial establishments with the potential to discharge metals, organic chemicals, and other wastes that can disrupt the treatment facility processes or cause the treatment facility to exceed the limits of its wastewater discharge permit.
3. Continue the Wastewater Facilities Planning Process in accordance with the R.I. Department of Environmental Management Consent Decree, with the objective of providing the most cost effective method of wastewater treatment and disposal at the Municipal Facility and the West Warwick regional facility without limiting Warwick's ability to continue to expand sewer service within its corporate limits.
4. Evaluate the alternatives for wastewater treatment and disposal, including connections to regional municipal treatment facilities and package treatment systems, for those sections of the City currently not planned for connection to the Warwick municipal sewer system, but where there are on-site disposal problems caused by poorly drained soil, shallow depth to groundwater, small lot size or inadequate disposal systems, or where there is groundwater aquifer contamination or the threat of contamination from on-site disposal systems.
5. Within the context of the Wastewater Facilities Planning process review and evaluate municipal policy regarding sewer

connections to consider mandatory connections, especially in environmentally sensitive areas and near waterbodies.

6. Develop the marina sewage pumpout facilities for Warwick Cove, Apponaug Cove, Greenwich Cove and Pawtuxet Cove.

7. Develop a homeowner education program to discourage the disposal of environmentally harmful chemicals such as cleaners, solvents, paint, acid, and the like in on-site sewage disposal systems and the municipal sewer system.

8. Explore, develop, and implement system management mechanisms including a water rate structure that encourages water conservation.

**Water Service**

1. Continue the improvements programmed by the City Water Department and the Kent County Water Authority to meet current and future service requirements, as determined by existing Capital Improvement Programs.

2. Work to eliminate system dead ends where possible and discourage new development proposals which do not promote this objective.

3. Promote water conservation through education and efficient rate structures that more realistically reflect the value of the water as expressed through its costs for development, depletion, damage, and capital and operating expenses.

4. Encourage development of alternative water sources where possible such as groundwater for large industrial process uses, which do not require portable water.

5. Encourage industrial process water reuse as an alternative to continuous consumption of water resources.

6. Require the preparation of new Capital Improvement Programs by the Kent County Water Authority and the City Water Department to program system improvements to the year 2000.

7. Upon the completion of the wellhead study of the Hunt River aquifer, prepare and adopt an aquifer overlay district with development regulations to protect the groundwater supply.

**Stormwater Management**

1. Develop a municipal stormwater drainage management plan.

2. Require stormwater drainage

management planning and design for all new or expanded commercial, industrial, or multiple lot residential development.

3. Require on-site stormwater management for new and expanding development with the goals of achieving a zero net increase in stormwater runoff and to protect and where possible improve the quality of the receiving waterbody.

4. Require the implementation of Erosion and Sedimentation Controls on all development including the development of single family residences and the development of individual lots to prevent adverse erosion and sedimentation impacts on abutting properties, natural resources, the municipal drainage system, and stormwater retention and detention basins.

5. Provide the building inspectors office with an Erosion and Sedimentation Control inspector to enforce the Erosion and Sedimentation Control Plan.

6. Develop intermunicipal agreements where appropriate to control stormwater runoff from and to adjacent communities.

7. Develop an agreement with the Rhode Island Department of Environmental Management to enable the city to provide timely and reasonable maintenance of existing drainage facilities, including stormwater detention/retention basins and natural drainageways.

8. Continue implementation of the Department of Public Works neighborhood drainage improvement program.

9. Assure proper maintenance of privately owned drainage systems, especially drainage detention/retention basins, by assigning responsibilities during the process of project approval.

10. Within the context of water quality management and the proposed municipal stormwater drainage management plan consider the need and alternatives for retrofitting water quality improvement techniques into existing older drainage systems and into areas with no water quality impact mitigation features.

11. Develop and install water quality impact mitigation techniques for drainage systems discharging into Gorton's Pond and other environmentally sensitive water bodies.

## CHAPTER 4

## OTHER MUNICIPAL SERVICES

**Fire Department**

**Fire and Rescue Services**

There are nine fire districts and eight fire stations in Warwick (see Figure 1 on following page and Table 9). Eight of the districts are covered by the Warwick Fire Department (WFD). All residents within the 9 districts are taxed equally regardless of where they reside. The East Greenwich Fire Department (EGFD) responds first to calls in the southern most section of Warwick, the Potowomut area. The WFD, District 6 also responds to alarms in the Potowomut area but the EGFD has the prime responsibility in this area. The location of the 8 stations and the equipment assigned to each are listed in Table 9. The City has one Hazardous Material Unit (Haz Mat) which is based at Station 2 and responds to calls throughout the City.

Warwick's 39 miles of coastline is covered by 2 Marine Units. Marine Unit #1 is staffed with personnel from Engine Company #1. The rescue boat is moored in Apponaug Cove and responds to all emergencies in Greenwich Cove and to all calls south of Conimicut Point in Narragansett Bay. Marine Unit #2 is staffed with personnel from Engine Company #2. The rescue boat which is much smaller than Rescue #1 is moored just out-side of Pawtuxet Cove and generally responds to emergencies from the Pawtuxet Cove south to Conimicut Point.

**Table 9**
**Fire Department Facilities**

| Station | Location | Engine # | Ladder # | Rescue # |
|---|---|---|---|---|
| Station 1 | 140 Veterans Memorial Drive | #1 | #1 | #1 |
| Station 2 | 771 Post Road | #2 | #2 Combination Engine, Haz Mat Unit. | #2 |
| Station 3 | 2373 West Shore Road | #3 | Reserve Engine #18 | |
| Station 4 | 1501 West Shore Road | #4 | #3 | #3 |
| Station 5 | 450 Cowesett Road | #5 | Lighting Unit | |
| Station 6 | 456 West Shore Road | #6 | Reserve Engine #15 | |
| Station 8 | T.F Green Airport - Airport Road | #8 | | |
| Station 9 | 314 Commonwealth Avenue | #9 & #19 | | |

The WFD is comprised of some 209 employees including a Battalion Chief, 2 Deputy Chiefs, a training officer, an emergency medical officer, a radio technician, two clerical people and 192 line fire and rescue personnel. In addition, there are 14 fire alarm maintenance personnel, 9 of which are civilian dispatchers. The fire prevention division employs six inspectors one of the inspectors carries out the duties of the Fire Marshal, and one retains the title of Assistant Fire Marshal.

**Issues / Needs Assessment**

In general the WFD is adequately staffed. The WFD has a Class 3 ISO rating. An ISO rating reflects a fire department's fire prevention and fire fighting capabilities, and directly effects insurance rates for residential, commercial and industrial buildings. The Department hopes to improve its rating to a Class 2 in the next few years. As more buildings are installed with sprinklers, alarm systems improve, and personnel receive more extensive training the Department's rating will be reassessed.

The highly urban nature of the City, the presence of T.F. Green Airport the malls and Route 95 make the task of providing fire and rescue service difficult. The airport creates an access barrier and the threat of an air disaster increases as the number of flights per day increases. WFD gives mutual aid for any aircraft crashes and is solely responsible for all building fires and rescue at the airport.

The WFD responds to all emergency calls on Route 95 in most of Warwick and parts of Cranston. EGFD handles emergency calls on the southern portion of Route 95 and WFD is responsible for emergency calls on a section of Route 95 in southern Cranston. The heavy flow of traffic on this interstate highway leads to many fire and rescue calls during the year and in some areas creates an access barrier.

The malls and recent strip development have created traffic problems which slow the response time of Engine Company 9 to emergency calls in the northern part of District 9. Units from Station #8 or #5 can often respond faster than units from station #9 to calls in this area because of the congestion at the intersection of Bald Hill Road and East Avenue.

**Fire and Rescue Calls**

From 1980 to 1989 there was a 70 percent reduction in the number of calls requiring response by an engine or fire company (see Table 10 and Figure 2 on following page). The total number of responses however, has increased 21 percent, indicating that more units are being dispatched to handle individual calls. Calls for rescue units have steadily increased through the 1980's (see Table 11 and Figure 3 on following page). There was a 66 percent increase in calls between 1980 and 1989, and 37 percent increase in the number of unit responses (see Figure 4 to 14 on following pages).

The WFD has mutual aid responsibilities with the City of Cranston and the Towns of West Warwick and East Greenwich. Within the City, there is good cooperation among districts in lending assistance on calls.

**Table 10**
**Fire & Ladder Responses by Company**

| **Fire Company** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Year** | **1** | **2** | **3** | **4** | **5** | **6** | **8** | **9** | **Total** |
| 1980 | 1969 | 1637 | 1408 | 1911 | 515 | 758 | 767 | 766 | 9731 |
| 1981 | 1910 | 1628 | 1288 | 1652 | 447 | 827 | 801 | 755 | 9308 |
| 1982 | 1832 | 1671 | 1202 | 1622 | 458 | 782 | 798 | 782 | 9147 |
| 1983 | 2089 | 1793 | 1336 | 1538 | 651 | 902 | 909 | 921 | 10139 |
| 1984 | 2105 | 1967 | 1298 | 1557 | 641 | 675 | 1002 | 1014 | 10259 |
| 1985 | 1912 | 1887 | 1209 | 1371 | 608 | 777 | 1018 | 949 | 9731 |
| 1986 | 2290 | 2252 | 1361 | 1631 | 693 | 881 | 995 | 1192 | 11295 |
| 1987 | 2302 | 2180 | 1190 | 1669 | 762 | 934 | 1118 | 1196 | 11351 |
| 1988 | 2551 | 2360 | 1220 | 1619 | 848 | 923 | 1190 | 1236 | 11947 |
| 1989 | 2602 | 2365 | 1100 | 1525 | 914 | 900 | 1145 | 1275 | 11826 |
| 1990 | 2286 | 1931 | 926 | 1245 | 871 | 748 | 974 | 979 | 9960 |
| **% Increase 1980-89** | **32%** | **44%** | **-2%** | **-2%** | **77%** | **19%** | **49%** | **66%** | **21%** |

**Note: Figures for 1990 reflect only the first three quarters of the year.**

**Table 11**
**Rescue & Fire Calls**

| Year | Rescue | Fire |
|---|---|---|
| 1980 | 4648 | 4994 |
| 1981 | 5114 | 3718 |
| 1982 | 5153 | 3556 |
| 1983 | 5390 | 4155 |
| 1984 | 5740 | 3808 |
| 1985 | 6233 | 4620 |
| 1986 | 6443 | 3384 |
| 1987 | 7178 | 3099 |
| 1988 | 7237 | 3172 |
| 1989 | 7729 | 2932 |
| 1990 | 6475 | 2418 |
| **% Change** | **66%** | **-70%** |

All districts have had significant increases in the number of responses in the past decade with the exception of Districts 3 and 4, which each had 2% decreases in the number of responses between 1980 and 1989 (see Figures 4 to 14).

**Water Supply**

All fire districts within the City are served by a hydrant system. Each pumper truck is equipped with 1000 feet of 4 inch hose making it possible to deliver large quantities of water over a great distance. Any large structures that are built are required to provide hydrants within a reasonable distance.

**Facilities and Equipment**

Each fire district company is housed in a separate headquarters. The facility space provided for the 8 districts is adequate for the existing staff and equipment. The construction of new fire station is being considered to replace the facilities of Engine company #8 at the airport, which are old and in need of repair. One possible site being

considered for the new station is located at the corner of Jefferson Boulevard and Kilvert Street near the airport. This site would improve the Engine Company's access to most locations within the district.

With the exception of Engine #1, a 1972 model, all of the Department's front line engines were purchased in the 1980's. Five were purchased in 1988 and 3 were acquired in 1982. Two of the ladder units were acquired in the 1980's and one is an early 1970's vintage. The rescue units were all purchased in the late 1980's. The reserve engines are early 1970's or late 1960's vintage.

**Hazardous Materials Response**

The hazardous material unit of the WFD is housed in the District 2 station. This unit is staffed by four people who are trained to handle hazardous material emergencies. While response to hazardous material calls is city-wide, specific attention is given to local commercial and industrial firms utilizing hazardous wastes. Haz Mat calls are responded to by one specially out-fitted Haz Mat truck, Engine #7, and usually an engine from the nearest district station. The Haz Mat Unit responds to all vehicle accidents in the city. Hazardous material response to an incident may be hindered by the City's limited east-west traffic circulation, and high traffic volumes on certain roads.

The primary duties of this unit are to assess the emergency, cordon off and evacuate affected areas, control and containment, and standby. Hazardous material responses are governed by the incident command system which delegates authority based on the severity of the incident and the action required. Hazardous material specialists from The Rhode Island Department of Environmental Management are called in to conduct removal operations and remediation and the Emergency Management Committee would coordinate evacuations.

The potential for accidents involving hazardous materials increases with the number of modes of transport used in delivering these materials. Every mode of transport available for hazardous materials occurs in Warwick to some degree, these include:

Interstates - Trucks carrying a wide range of hazardous materials;

Railroad - Freight and tank cars (bulk commodities and liquid chemicals);

Airport - Radioactive materials, aviation fuel;

Water transport - Oil, petroleum products, liquified natural gas.

Unlike stored hazardous materials, the WFD does not have information on the nature of hazardous materials in transit. Often the only way to identify materials at an accident scene is from a shipper's bill of lading. The hazards related to accidents involving hazardous materials are compounded when a Haz Mat unit arrives without knowing the types of materials involved. The WFD is seeking to add a microcomputer to the hazardous materials truck. An on-board computer would enable the Haz Mat crew to more quickly assess hazardous cargos, and to more effectively deal with threats from chemical reactions. The Department is in the process of training all its personnel for Haz Mat response. Thirty-two hours of training are required to be certified for first response duty. Training is being conducted by qualified instructors from within the WFD.

While the WFD maintains adequate personnel on the hazardous materials unit, a high turnover rate resulting from job promotions and transfers reduces the crew's level of experience in dealing with actual hazardous material incidents. Despite this, Warwick's Hazardous Material Response Unit is considered one of the finest in the State.

**Service Areas**

Pumper trucks are required to travel more than the 1.5 miles suggested by the National Board of Fire Insurance to reach sections of Buttonwoods and Warwick Neck.

**Staffing Requirements**

Based on standards for full-time personnel, and population projections provided by the state division of planning, the Departments complement of 192 firefighters exceeds the current requirement by 8 percent. With a standard of 5 firefighters per 1,000 dwelling units the City should have at-least 177 line firefighters (see Table 12). Projected population increases in next 30 years will not be great enough to require the Department to add additional personnel. The level of commercial and industrial development in the City and the presence of the airport and Route 95 require the attention of more personnel, therefore the surplus in firefighting may be illusionary.

**Table 12**
**Staffing Requirements Based**
**on State Population Projections**

| Year | Population (Projected) (1) | Persons/ Household (2) | Projected Dwelling Units (3) | Firefighters Needed (4) |
|---|---|---|---|---|
| 1980 | 87,123 | 2.81 | 32,034 | 160 |
| 1990 | 87,654 | 2.65* | 33,077 | 165 |
| 1995 | 87,987 | 2.57* | 34,236 | 171 |
| 2000 | 88,319 | 2.49* | 35,469 | 177 |
| 2005 | 88,652 | 2.41* | 36,785 | 184 |
| 2010 | 88,985 | 2.32 | 38,356 | 192 |
| 2015 | 89,318 | 2.32 | 38,499 | 192 |
| 2020 | 89,650 | 2.32 | 38,642 | 193 |

Notes:

1 Rhode Island Department of administration, division of Planning

2 Persons per household figure for 1980, from 1980 Census, * interpellated from 2010 projection

3 Population (divided by) # Person / household = Projected # of dwelling units.

4 five full time firefighters per 1,000 dwelling units, Real Estate Research Corporation.

**Table 13**
**Staffing Requirements Based on Buildout Analysis**

| Year | Population (Projected) (1) | Persons/ Household (2) | Project Dwelling Units (3) | Firefighters Needed (4) |
|---|---|---|---|---|
| 1980 | 87,123 | 2.81 | 32,034* | 160 |
| 1990 | 92,665 | 2.65* | 34,968** | 175 |
| 1995 | 93,641 | 2.57* | 36,436 | 182 |
| 2000 | 94,378 | 2.49* | 37,903 | 190 |
| 2005 | 94,352 | 2.41* | 39,150 | 196 |
| 2010 | 93,721 | 2.32 | 40,397 | 202 |
| 2015 | 96,101 | 2.32 | 41,423 | 207 |
| 2020 | 98,482 | 2.32 | 42,449 | 212 |

Notes:
1 Population based on buildout figures. (Units * Persons/Unit = Population)
2 Persons per household figure for 1980, from 1980 Census, * interpellated from 2010 projection
3 Number of dwelling units based on buildout
4 five full time firefighters per 1,000 dwelling units, Real Estate Research Corporation.

* 1980 U.S Census
** Based on the number building permits issued since 1980 in Warwick. Warwick Monograph 1990.

If the number of firefighters needed in the future is based instead on the number of dwellings projected to be built according to the buildout analysis the apparent surplus of personnel is not as significant (see Table 13).

The number of units built in a five-year period is based on the amount of land available and historical building trends. The WFD will have to consider augmenting its staff by the year 2002.

**Table 14**
**WFD Budget History**

| Year | Actual Expenditure | Real Dollars 1989 | % Change in Real Dollars |
|---|---|---|---|
| 1984-85 | $7,737,011 | $9,448,999 | |
| 1985-86 | $8,364,990 | $9,923,780 | 5% |
| 1986-87 | $9,387,926 | $10,866,672 | 10% |
| 1987-88 | $10,434,611 | $11,568,026 | 6% |
| 1988-89 | $11,349,870 | $11,983,524 | 4% |
| 1989-90 | $12,080,859 | | 6% |
| 1990-91 | $13,459,114 | | 11% |

Note: Figures for 1990-1991 are from the General and Enterprise Fund Budgets for 1990-1991.

**Recommendations**

1. Construct a new fire station to replace the facilities of Engine company # 8 at the airport, which are old and in need of repair. This site would improve the Engine Company's access to most locations within the district.
2. Procure new engine to replace Engine #1, additional rescue unit by 1994
3. Continue training in Hazardous Material response.
4. Improve hydrant system.
5. Continue efforts in the area of fire prevention e.g. 100% of required buildings to be installed with sprinklers, public education, enforcement of fire code.

**Police Department**

The Warwick Police Department is housed in one facility at 99 Veterans Memorial Drive (see Figure 15 on following page). In 1989, the department responded to 40,266 calls for service. Growth, especially commercial growthin the western districts have placed a greater demand upon the everyday services of the department, i.e., more alarms, auto thefts, abandoned vehicles and accidents. The department has responded to the increase in demand for its services by increasing the amount of man hours spent in the western districts, where commercial and residential growth is the greatest, and by taking advantage of technological advances in law enforcement.

**Staffing**

The Department has a complement of 175 authorized police officers, 74 vehicles and 6 motorcycles. The breakdown of personnel includes:

| | |
|---|---|
| Chief | 1 |
| Commanders | 3 |
| Captains | 8 |
| Lieutenants | 7 |
| Sergeants | 27 |
| Officers | 122 |

The Department also has 52 civilian Personnel including:

1 Automotive Superintendent
2 Automotive Bodyman
1 Automotive Washer
5 Auto Mechanics
1 Animal Control Supervisor
1 Animal Control Poundkeeper
1 Animal Control Officers
8 Communications Clerks
7 Communications Dispatchers
1 Communication Technician
1 Chief License Clerk
1 Payroll Specialist
1 Athletic League Assistant
1 Printer
6 Records Clerks
2 Secretaries
3 Telephone Operators
5 Transcriptionists (2 part time)
1 Victim Restitution Clerk
1 License Clerk
2 Jailers (part time)
1 Detail Clerk

The WPD is committed to a policy of increasing the efficiency in the use of man-hours through the use of technology. Since 1988 the Department has been operating with a dictation system which allows officers in the field to call in reports from almost any location in the City rather than hand writing reports. Department studies have shown that using this system can reduce the time spent doing paper work for an average call from twenty minutes to under ten minutes in some instances. Over the course of a year the Department estimates that 7,600 man-hours will be saved or the equivalent of four full time officers.

The dictated calls are transcribed by the Departments 5 Transcriptionists who work 3 shifts. The Department also has a computerized aided dispatching (CAD) system, which allows civilian dispatchers to be used where sworn officers were used in the past. The CAD allows patrol units to be more efficiently used in the field and it provides officers with valuable information regarding the call they will be responding to. The records division, which is linked to the communications division, is fully automated. Reports are word-processed into the Department's computer making retrieval and storage more efficient, and further reducing the time officers spend on administrative tasks.

The use of these semi-automated systems has allowed the Department to keep sworn officers in the field and on patrol rather than in the station as dispatchers or tied up doing paper work. The net result is the Department has been able to maintain the number of hours officers spent patrolling and responding to calls but with fewer personnel.

The following table shows the number of officers that would be expected given a certain number of dwelling units, based on national averages. With 175 officers, the WPD falls short of the national average by 23 officers. According to the chief the Department is adequately staffed given the level of technology used and the nature of the City.

**Table 15**
**WPD Staffing Requirements Based on State Population Projections**

| Year | Population (Projected) (1) | Person/ Household (2) | Projected Dwelling Units (3) | Police Officers Needed (4) | Vehicles Needed (5) |
|---|---|---|---|---|---|
| 1980 | 87,123 | 2.81 | 32,034 | 192 | 32 |
| 1990 | 87,654 | 2.65* | 33,077 | 198 | 33 |
| 1995 | 87,987 | 2.57* | 34,236 | 205 | 34 |
| 2000 | 88,319 | 2.49* | 35,469 | 213 | 35 |
| 2005 | 88,652 | 2.41* | 36,785 | 221 | 37 |
| 2010 | 88,985 | 2.32 | 38,356 | 230 | 38 |
| 2015 | 89,318 | 2.32 | 38,499 | 231 | 38 |
| 2020 | 89,650 | 2.32 | 38,642 | 232 | 39 |

Notes:
1 Rhode Island Department of Administration, Division of Planning
2 Persons per household figure for 1980, from 1980 Census, * interpellated from 2010 projection
3 Population (divided by) # Person / household = Projected # of dwelling units.
4 5 full time police officers per 1,000 dwelling units, Real Estate Research Corporation.
5 1 vehicle per 1,000 dwelling unit, Real Estate Research Corporation.

If the number of police officers needed in the future is based on the number of dwellings projected to be built according to the buildout analysis, the apparent deficiency in of

personnel is even more significant (see Table 16). The number of units built in a five-year period is based on the amount of land available and historical building trends.

**Table 16**
**WPD Staffing Requirements Based on Buildout Analysis**

| Year | Population (Projected) (1) | Person/ Household (2) | Projected Dwelling Units (3) | Police Offices Needed (4) | Vehicles Needed (5) |
|---|---|---|---|---|---|
| 1980 | 87,123** | 2.81** | 32,034** | 192 | 32 |
| 1990 | 92,665 | 2.65* | 34,968*** | 210 | 35 |
| 1995 | 93,641 | 2.57* | 36,436 | 219 | 36 |
| 2000 | 94,378 | 2.49* | 37,903 | 227 | 38 |
| 2005 | 94,352 | 2.41* | 39,150 | 235 | 39 |
| 2010 | 93,721 | 2.32 | 40,397 | 242 | 40 |
| 2015 | 96,101 | 2.32 | 41,423 | 249 | 41 |
| 2020 | 98,482 | 2.32 | 42,449 | 254 | 42 |

Notes:
1 Population based on buildout figures. (Units * Persons/Unit = Population)
2 Persons per household figure for 1980, from 1980 Census, * interpellated from 2010 projection
3 Number of dwelling units based on buildout
4 5 full time police officers per 1,000 dwelling units, Real Estate Research Corporation.
5 1 vehicle per 1,000 dwelling unit, Real Estate Research Corporation.
** 1980 U.S Census
*** Based on the number building permits issued since 1980 in Warwick. Warwick Monograph 1990.

**Facilities**

The facility built in 1977 is a two-story masonry building with 26,865 square feet of space. The building appears to meet most of the requirements of the Department at present staffing levels. Some minor renovations will be made to improve the efficiency of interior spaces in the communications and information center of the Administrative Division, and other improvements are mandated to improve handicapped access to the facility. The Department is also in need of garage space

which will be used to store vehicles with sophisticated electronic equipment, and as a vehicle identification number (V.I.N) checking area. The Department's indoor pistol range has been closed because the ventilation system does not adequately handle fumes discharged from the firing of weapons. The Department is currently using its outdoor range for its monthly weapons training courses.

The Department also needs to update their Bureau of Criminal Investigation's (BCI) mobile lab in addition to a mobile communication vehicle. The BCI lab is dispatched to all major crime scenes, and the mobile communication lab is used as a command post for large events and major emergencies. Each vehicle has an estimated cost of $60,000.

**Other Issues**

The WPD has responded to a study which noted the increasing number of calls in the west end of the City, by adjusting the beat districts in this area, and by increasing the number of man hours focused in the three western districts.

The number of calls increased almost 40 percent between 1986 and 1989, from 60,000 to 83,631. While the crime index, which includes 7 major crimes, shows a declining rate of increase between 1986 and 1988, and an actual decline in the number of crimes between 1988 and 1989. Index crimes for four years ending in 1990 are shown in Table 17.

**Table 17**
**Crime Index, 1986-1989**

| | 1986 | 1987 | 1988 | 1989 | % Change by Crime |
|---|---|---|---|---|---|
| Homicide | 2 | 2 | 4 | 4 | **100.00%** |
| Rape | 18 | 30 | 34 | 15 | **-16.67%** |
| Robbery | 25 | 24 | 37 | 28 | **12.00%** |
| Assault | 130 | 353 | 741 | 822 | **532.31%** |
| Burglary | 919 | 951 | 913 | 871 | **-5.22%** |
| Larceny | 2,870 | 3,213 | 3,434 | 3,197 | **11.39%** |
| Auto Theft | 807 | 983 | 989 | 1,170 | **44.98%** |
| **Total** | **4,771** | **5,556** | **6,152** | **6,107** | **28.00%** |
| **% Change** | | **16.45%** | **10.73%** | **-0.73%** | |

The sharp increase in the number of assaults between 1986 and 1989 may be attributed to a change in Rhode Island law. The Domestic Violence Act (Title 12-29) enacted in 1988 requires that police make an arrest in cases of domestic violence. Before the Act, police had more discretion in handling domestic violence cases. Normally the people involved were separated and allowed to cool off, and arrests were made only if hostilities persisted or if one of the parties insisted that arrests be made.

Approximately 30 percent of all calls for service are in response to alarms and the vast majority (estimated 96%) of these are false alarms. The Department is investigating measures that would reduce the number of false alarms. Fines assessed to businesses and residences that exceed a set limit of false alarms per month is an example of the kind of measure other communities have taken.

The number of responses to alarms, accidents and abandoned cars make up a large percentage of the increase in overall calls. Recent commercial development along Route 2 can be linked to the increased number of calls. As traffic flows and number of curb cuts increase the

number of accidents can be expected to increase in-kind. Large parking lots serving commercial development along Route 2 are frequently used as depositories for unwanted vehicles and provide an abundant supply of vehicles for car thieves to choose from.

**Table 18**
**WPD Budget History**

| Year | Actual Expenditure | Real Dollars 1989 | % Change in Real Dollars |
|---|---|---|---|
| 1984-85 | $7,563,703 | $9,237,343 | |
| 1985-86 | $8,192,641 | $9,719,314 | 5% |
| 1986-87 | $8,788,043 | $10,172,298 | 5% |
| 1987-88 | $9,803,843 | $10,868,743 | 7% |
| 1988-89 | $10,693,693 | $11,290,714 | 4% |
| 1989-90 | $11,878,022 | $11,878,022 | 11% |
| 1990-91 | $13,315,601 | | 12% |

Note: Figures for 1990-1991 are from the General and Enterprise Fund Budgets for 1990-1991.

**Recommendations**

1. Continue study of western areas of the City and adjust manpower and districts accordingly.
2. Continue policy of improving technology to allow officers to spend more time on the beat.
3. Upgrade training facilities, mobile crime lab and mobile communication command center.
4. Develop training programs which enhance an officers effectiveness in dealing with the growing domestic violence problem.
5. Develop an ordinance to decrease the number, and cost of responding to false alarms.
6. Investigate alternate measures for improving service in rapidly growing mall / Route 2 area.

**Emergency Management**

There are a class of incidents and accidents that by their very scale require a coordinated response by multiple levels of government. These range from natural emergencies, such as floods, hurricanes, and tornadoes, to those manmade such as nuclear warfare, chemical spills, and air crashes. What these incidents and accidents have

in common is their potential for generating mass casualties and massive damage to property services and facilities. As such, they are classified as disasters. To deal with disasters, the City of Warwick in 1986 put in place an Emergency Operations Plan (EOP) that seeks to identify and coordinate all aspects of emergency response. The EOP functions as an element of the municipal comprehensive plan.

Central to the City's emergency response effort is the Director of Emergency Response. In the event of an emergency, the Director would coordinate the City's emergency response through his role as head of the Emergency Operations (EO) staff. The EO staff represents all sectors of municipal government as well as non-profit aid groups such as the American Red Cross and the Warwick Emergency Volunteers (Table 19). The composition of the EO staff is broken down among first responders, second responders and full responders. For this reason, members of the EO staff are subject to staggered call ups based on the severity of the incident.

**Table 19**
**Emergency Operations Staff**

| | |
|---|---|
| **First Responders** | |
| Director of Emergency Management | Mayor[1] |
| Police Chief | Mayor's Chief of Staff |
| Fire Chief | American Red Cross |
| State Director of Emergency Management | American Red Cross – Warwick Chapter |
| **Second Responders** | |
| Deputy Police Chief | Warwick Emergency Volunteers |
| Director of Public Works | |
| **Full Responders** | |
| School representatives | Parks and Recreation Director |
| Water Department representatives | City Solicitor |
| Planning Department Director | City Clerk |
| Building Department Director | Human Services |
| Sewer Department Director | Senior Center |

Source: Director of Emergency Management

In the event of an emergency, the EO staff would gather at the Emergency Operations Center located in the Warwick Police Station to oversee the City's response to the emergency. The EOC is equipped with both telephone and wir[2]eless communications equipment and can be hardened to withstand damage from hurricanes and fallout from a nuclear attack or incident.

If evacuation becomes necessary, the EOP identifies 18 emergency shelters around the City. These include both public and private schools, churches, the Rhode Island Mall and the CCRI campus. The plan includes procedures for activating shelter staffs and facilities, and intake and treatment of displaced persons seeking shelter during an emergency.

The EOP also identifies key positions in the response team and provides guidelines for training personnel and maintaining emergency equipment. Training and maintenance are seen as ongoing activities which are meant to keep personnel and equipment at an optimal state of readiness should an emergency condition arise.

Natural disasters which have impacted Warwick in the past include hurricanes and gales. One impact associated with these storms on a coastal community is the danger posed by flooding. To help minimize the damage potential of this flooding, the City of Warwick has adopted a flood zone overlay in its zoning ordinance. This overlay regulates construction in all areas identified by the Federal Emergency Management Agency (FEMA) as being located within a 100 year flood or velocity zone. Construction in these areas must be flood proofed through such measures as elevated living areas, protected utility cores, breakaway foundation walls etc, that protect the home from flood related damage while also preventing any increase in downstream flood levels through increased runoff rates.

Manmade disasters that could affect the city include aircraft crashes and hazardous materials spills. The potential for the former reflects the fact that the state's only commercial common-carrier airport is located in Warwick. The potential for the latter reflects the fact that two interstate highways and a major rail line pass through the city and also reflects Warwick's sizable industrial base. As already mentioned under the discussion of the Fire Department, the City is well equipped to respond to a wide range of hazardous materials spills both in Warwick and in its neighboring communities.

**Recommendations**

1. Update the Emergency Operations Plan.
2. Conduct, at minimum, one simulated disaster drill within the city limits each year. Said drill should have a different theme each year, (i.e., hurricane, nuclear accident, air crash) that would require a coordinated response of all city departments, private aid groups, and state emergency management agency. Exercise should test and evaluate all aspects of emergency management including notification, mobilization, response and recovery.

3. Undertake an ongoing program of first aid/CPR training for municipal employees in all city departments. Compile a registry of individuals with such training that can be accessed if necessary during an emergency response.

**School Department**

The Warwick Public school system consists of 20 elementary schools, 3 Junior High Schools and 4 High Schools. Two of the high schools Toll Gate and the Vocational Technical Facility are grade 10-12 facilities, and Pilgrim and Veterans are 4 year high schools grades 9-12 Winman Junior High School accommodates grades 7-9. All the elementary schools are Kindergarten through grade 6 facilities, with the exception of Drum Rock and Hoxsie, which have no Kindergartens. Figure 16 (see figure on following page) illustrates the general locations of the City's schools. Table 20 shows the current enrollment of each facility, the estimated student capacity and other information regarding the facility.

**Enrollment Trends**

Figure 17 (see figure on following page) shows the enrollment trends in the Warwick school system for various intervals from 1964-65 to the present. Public school enrollment increased about 18 percent from the mid-1960's to mid-1970, while total population increased only 10 percent. Enrollment peaked at approximately 18,600 in the mid-1970's, and declined sharply by the early 1980's, while total population increased less than 1 percent from the mid-1970's to 1980. These figures support the notion that family size is shrinking. While more families are moving into Warwick they have typically fewer children, and therefore have less of an impact on the school system.

Non-public school enrollment increased approximately 5 percent from the mid-1960's to the mid-1970's, and unlike the public schools reached its peak enrollment in the early 1980's. Enrollment decreased 33 percent through the 1980's. Enrollment was 1,919 in the 1989-90 school year, down from 2,849 in the 1980-81 school year.

The total public school system enrollment for 1990-91 is estimated at 11,425 (Based on New England School Development Council figures). Enrollment is projected to begin increasing by

small increments through the 1990's, peaking in 1997-98, at 11,898. This represents an increase of 473 students in the next ten years (see Figure 18 on following page).

**Table 20**
**Warwick Public School Facilities**

| Facilities | Student Enrollment | # of Teachers | Building Sq.Ft. | Site Size | Est, Student Capacity | Recreational Facilities |
|---|---|---|---|---|---|---|
| Cedar Hill | 389 | 14 | 32,000 | 10 | 420 | B,P |
| Drum Rock | 232 | 10 | 22,000 | * | 220 | B,P |
| Francis | 316 | 12 | 26,400 | 10 | 245 | B,P |
| Greene | 272 | 11 | 26,500 | 5 | 220 | P |
| Greenwood | 293 | 11 | 24,600 | 3 | 220 | B,P |
| Holden | 286 | 11 | 26,400 | 4 | 220 | B,P |
| Holliman | 390 | 14 | 42,300 | 9 | 395 | P |
| Hoxsie | 299 | 13 | 21,000 | 24 | 245 | B,P |
| Lippitt | 341 | 12 | 41,790 | 7 | 375 | B,P |
| Norwood | 292 | 11 | 25,000 | 4 | 295 | P |
| Oakland Beach | 433 | 17 | 50,500 | 4 | 500 | P |
| Park | 261 | 10 | 32,500 | 10 | 370 | P |
| Potowomut | 202 | 8 | 20,750 | 2 | 225 | B,P |
| Rhodes | 338 | 12 | 38,680 | 10 | 345 | B,P |
| Robertson | 260 | 10 | 38,690 | 7 | 370 | B,P |
| Scott | 331 | 11 | 27,560 | 22 | 250 | B,P |
| Sherman | 395 | 14 | 38,600 | 12 | 370 | B,P |
| Warwick Neck | 304 | 10 | 28,000 | 10 | 270 | P |
| Wickes | 259 | 14 | 37,700 | 11 | 420 | P |
| Wyman | 339 | 13 | 32,400 | 9 | 320 | B,P |
| Aldrich | 638 | | 100,000 | 12 | 800 | B,P,S,TC |
| Gorton | 604 | | 100,000 | 49 | 850 | B,P,S,TC |
| Pilgrim | 1163 | | 210,000 | 45 | 1,850 | B,P,S,F,TC,T |
| Toll Gate | 713 | | 181,000 | * | 1,400 | B,P,S,F,TC,T |
| Winman | 923 | | 144,000 | * | 1,200 | |
| Warwick Vets | 1047 | | 209,900 | 31 | | B,P,S,F,TC,T |
| Vocational Tech. | 236 | | 44,000 | * | 1,850 | |
| Old Ad. Building | | | 7,000 | 3 | | |
| New Ad. Building | | | 10,000 | | | |
| Maintenance | | | 10,000 | 39 | | |
| **TOTALS** | **11,584** | **238** | **1,649,270** | **445** | **14,245** | |

Table 21 and Figure 19 (see figure on following page) show enrollment trends for the Warwick public schools by grade for 1990-1999.

**Table 21**

**Projected Enrollment by Grade 1990-91 to 1998-99**

| Year | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1990-1991 | 761 | 1028 | 911 | 860 | 832 | 880 | 872 | 930 | 959 | 939 | 848 | 853 | 752 | 11,425 |
| 1991-1992 | 811 | 974 | 930 | 884 | 851 | 849 | 898 | 985 | 907 | 1002 | 873 | 814 | 785 | 11,563 |
| 1992-1993 | 764 | 1038 | 881 | 902 | 875 | 868 | 866 | 1015 | 960 | 948 | 932 | 838 | 749 | 11,636 |
| 1993-1994 | 765 | 978 | 939 | 855 | 893 | 893 | 885 | 979 | 990 | 1003 | 882 | 895 | 771 | 11,728 |
| 1994-1995 | 765 | 979 | 885 | 911 | 846 | 911 | 911 | 1000 | 955 | 1035 | 933 | 847 | 823 | 11,801 |
| 1995-1996 | 765 | 979 | 886 | 858 | 902 | 863 | 929 | 1029 | 975 | 998 | 963 | 896 | 779 | 11,822 |
| 1996-1997 | 765 | 979 | 886 | 859 | 849 | 920 | 880 | 1050 | 1003 | 1019 | 928 | 924 | 824 | 11,886 |
| 1997-1998 | 765 | 979 | 886 | 859 | 850 | 866 | 938 | 994 | 1024 | 1048 | 948 | 891 | 850 | 11,898 |
| 1998-1999 | 765 | 979 | 886 | 859 | 850 | 867 | 883 | 1060 | 970 | 1071 | 976 | 911 | 821 | 11,893 |

Source: New England School Development Council - - Sudbury, MA, 11-16-89.

The largest increase in enrollment is expected to occur in high school enrollment, from 3,392 to 3,775, an 11 percent increase. Table 22and Figure 19 (see figure on following page) show the predicted changes in enrollment by grade for the next decade. Middle school enrollment is projected to increase 7.5 percent in the next decade, from 1,892 to 2,029. Elementary school enrollment is expected to increase by 53 students

in the 1991-92 school year, but by the end of the decade is expected to have declined by 55 or, less than 1 percent.

**Table 22**
**Predicted Annual Changes in Enrollment by Grade**

| School Year | K | 1 | 2 | 3 | 4 | 5 | 6 | K - 6 | 7 | 8 | 7 - 8 | 9 | 10 | 11 | 12 | 9-12 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 91-92 | 50 | -54 | 19 | 24 | 19 | -31 | 26 | **53** | -52 | 63 | **11** | 63 | 29 | -39 | 33 | **86** | **150** |
| 92-93 | -47 | 64 | -49 | 18 | 24 | 19 | -32 | **-3** | 53 | -54 | **-1** | -54 | 59 | 24 | -36 | **-7** | **-11** |
| 93-94 | 1 | -60 | 58 | -47 | 18 | 25 | 19 | **14** | 30 | 55 | **85** | 55 | -50 | 57 | 22 | **84** | **183** |
| 94-95 | 0 | 1 | -54 | 56 | -47 | 18 | 26 | **0** | -35 | 32 | **-3** | 32 | 51 | -48 | 52 | **87** | **84** |
| 95-96 | 0 | 0 | 1 | -53 | 56 | -48 | 18 | **-26** | 20 | -37 | **-17** | -37 | 30 | 49 | -44 | **-2** | **-45** |
| 96-97 | 0 | 0 | 0 | 1 | -53 | 57 | -49 | **-44** | 28 | 21 | **49** | 21 | -35 | 28 | 45 | **59** | **64** |
| 97-98 | 0 | 0 | 0 | 0 | 1 | -54 | 58 | **5** | 21 | 29 | **50** | 29 | 20 | -33 | 26 | **42** | **97** |
| 98-99 | 0 | 0 | 0 | 0 | 0 | 1 | -55 | **-54** | -55 | 22 | **-33** | 22 | 27 | 19 | -30 | **38** | **-49** |
| Net Change | | | | | | | | **-55** | | | 141 | | | | | 387 | 47 |

Population projections agree with projections of enrollment in some categories but are not in agreement in others. Within the next decade the State projects population in the 0-4 year old category to decrease sharply, and for the 4-9 year old population to increase moderately. This is in agreement with the New England School Development Council figures which show a slight decline in K-6 enrollment in the decade. However, the 10-14 year age group is expected to increase by a greater amount than the enrollment projections would indicate, and the 15-19 year age group is expected to decrease, whereas the enrollment projections indicate a substantial increase in the next decade (see Figure 18).

**Education Indicators -** Education indicators are facts and figures that illustrate the school system's characteristics. They are useful for comparison with other Towns or the State. Table 23shows Warwick's standing Statewide for selected key

indicators.

**Table 23**
**Education Indicators**

| Indicator | Rhode Island | Warwick |
|---|---|---|
| Graduation Rate | 76.8% | 84.6% |
| Annual Dropout Rate | 6.4% | 4.1% |
| Percent Public School Enrollment | 85% | 86% |
| Percent Non-Public School Enrollment | 15% | 14% |
| Average Class Size K-6 | 22 | 23 |
| Average Class Size 7 - 12 | 19 | 18 |
| Cost per pupil | $5,373 | $6,073 |
| Percent of budget from taxes | 56.4% | 62.3% |
| Percent of budget from State | 39.1% | 34.4% |
| Percent of budget from Federal government | 4.5% | 3.3% |

Warwick has a higher graduation rate and a lower dropout than the State as a whole. The City has about the same composition as the State with regard to public and non-public enrollment, has close to the average class size, spends more money per pupil, pays a higher percentage of its taxes for education and receives less funding from the State and Federal Government.

Table 24 is a list of the expenditures to be made for capital improvements on the various school facilities in the next five years. Improvements included in this program range from replacing clocks to roof repairs and major renovations. Additional items were added to the list of improvements, and include: Toll Gate auditorium addition, Pilgrim auditorium renovation, athletic field upgrading, school furniture and equipment, laboratory renovations, sewer connections, architectural and engineering fees. The list of necessary improvements will be prioritized by the School Committee, and those which are chosen for funding will be initiated for the first phase of construction. A $20 million dollar bond issue will be sold to finance the improvements, over a minimum of five years.

**Table 24**
**Capital Improvement Program Budget**

| Facilities | Phase 1 1989-91 | Phase 2 1991-93 | Phase 3 1993-94 | Total |
|---|---|---|---|---|
| Cedar Hill | $132,000 | $205,000 | $225,000 | $562,000 |
| Drum Rock | $13,000 | $93,000 | $31,000 | $137,000 |
| Francis | $147,000 | $90,600 | $180,000 | $417,600 |
| Greene | $49,000 | $47,000 | $200,000 | $296,000 |
| Greenwood | $73,800 | $110,000 | $126,000 | $309,800 |
| Holden | $119,000 | $97,000 | $28,000 | $244,000 |
| Holliman | $270,000 | $274,000 | $58,000 | $602,000 |
| Hoxsie | $30,500 | $52,000 | | $82,500 |
| Lippitt | $187,800 | $110,000 | $600,000 | $897,800 |
| Norwood | $18,000 | $59,000 | | $77,000 |
| Oakland Beach | $138,100 | $88,400 | $65,000 | $291,500 |
| Park | $135,500 | $154,000 | $120,000 | $409,500 |
| Potowomut | $101,600 | $54,200 | | $155,800 |
| Rhodes | $271,100 | $265,000 | $18,000 | $554,100 |
| Robertson | $168,000 | $126,600 | $461,000 | $755,600 |
| Scott | $39,300 | $27,000 | $150,000 | $216,300 |
| Sherman | $309,000 | $244,000 | $59,000 | $612,000 |
| Warwick Neck | $139,300 | $59,700 | $120,000 | $319,000 |
| Wickes | $297,400 | $237,000 | $54,000 | $588,400 |
| Wyman | $54,400 | $58,000 | $154,000 | $266,400 |
| | **$2,693,800** | **$2,451,500** | **$2,649,000** | **$7,794,300** |
| Aldrich | $263,000 | $195,000 | $183,000 | $641,000 |
| Gorton | $591,600 | $762,000 | $66,000 | $1,419,600 |
| Winman | $65,000 | $150,000 | $5,000 | $220,000 |
| | **$919,600** | **$1,107,000** | **$254,000** | **$2,280,600** |
| Pilgrim | $489,400 | $956,000 | $166,000 | $1,611,400 |
| Toll Gate | $150,000 | $207,000 | $132,000 | $489,000 |
| Warwick Vets | $775,000 | $1,214,000 | $10,000 | $1,999,000 |
| Vocational Tech. | | | | |
| | **$1,414,400** | **$2,377,000** | **$308,000** | **$4,099,400** |
| Old Ad. Building | $40,000 | $12,000 | $36,000 | $88,000 |
| New Ad.Building | | | | |
| Maintenance | | $23,000 | $120,000 | $143,000 |
| | $40,000 | $35,000 | $156,000 | $231,000 |

| | | | | |
|---|---|---|---|---|
| **Grand Total** | **$5,067,800** | **$5,970,500** | **$3,367,000** | **$14,405,300** |

The Warwick public school system projects expenses for the 1989-90 school year to be $68,783,128 and requested an 8.8 percent increase in its budget for the 1990-91 school year resulting in a final budget figure of $74,858,166. In 1989, 49.6 percent of the City's taxes were devoted to the public school system. The percentage of City's tax revenue devoted to the school system has dropped more than 10 percent since 1982.

**Libraries**

Warwick is served by one main public library, three branch libraries, and a private library. The Warwick Public Library (WPL) is located at 600 Sandy Lane. The branch libraries located on Post Road in Apponaug, Beach Avenue in Conimicut, and Pawtuxet Avenue in Norwood (see Figure 20 on following page). The Pontiac Free Library is located on Greenwich Avenue. The WPL is open 68 hours a week. The branches have fewer hours, in most cases around 20 hours per week. The library system is funded by the City, State and by federal grants, and its activities are overseen by the Board of Library Trustees.

The Sandy Lane facility was built in 1964, and had major renovations in 1977. Warwick's library system started out as a private system. The small neighborhood branch facilities with limited collections and hours were not sufficient to handle the City's growing population and expectations. The Sandy Lane facility was designed to serve the whole community as a full service library. With the additions and renovations made in 1977 and the development of an automated reference system, the library has made strides in achieving the goals set out in its mission statement.

> The Warwick Public Library provides materials and services to meet the information needs of the community. The collection emphasizes recreational and leisure materials in addition to current information in a variety of formats. Through its materials and programs for children, the library encourages the development of learning and reading skills. The Library also supports the educational needs of students through the twelfth grade. (adopted 10/25/89)

There are three branch libraries which each have collections of approximately 20,000 items are not staffed with professional librarians, and have few programs for the public. The branches are linked to the main branch by the computerized catalog

system.

Warwick Public Library (WPL) is the regional library for Kent County, Cranston, Scituate and Foster. In fiscal year 1989-1990, the WPL received a $108,262 Grant-in aid from the state to administer the regional library program. The program, which is staffed by a coordinator, a technician and a clerk typist, have the following goals and objectives:

**Goal 1 - Assist the Inter Library Loan (ILL) libraries in improving their ILL service.**

1. .....Visit and assess member libraries in-house ILL procedures and make recommendations for improvements.
2. .....Process ILL requests from member libraries and from around the state.
3. .....Assist Department of State Library Service (DSLS) in testing new ILL equipment for local use i.e. catalog database CLAN, FAX ILL requests.
4. .....Evaluate the current regional delivery system and assist DSLS in moving toward a Statewide delivery system. This objective has been met. The state now handles the delivery of materials between libraries making it possible for WPL to eliminate its delivery expense
5. .....Revise the Union List of Periodicals.

**Goal 2 - To provide communications among all libraries in the region.**

1. ..... Publish a newsletter for staff of the member libraries informing them of happenings within each facility.
2. ..... Act as liaison between member libraries and DSLS.

**Goal 3 - To assist libraries in areas of publicity and programming.**

1. ..... Hold workshops and meetings and attend similar functions which might be beneficial to the services of the Western Region.
2. ..... Provide photocopying services to member libraries

**Goal 4 - Strengthen the Network through Collection Development.**

1. ..... Purchase additional reference titles.
2. ..... Provide government publications to member libraries.
3. ..... Maintain regional video collection.
4. ..... To have at least 1 reference and 1 periodical giveaway.[3]

The WPL also administered the Rhode Island Library Film Cooperative. Through this program films and videos were circulated to member libraries in the state. The library received funding for this program from the Department of Library Services in the amount of $137,922 in fiscal year 1989-90. Both this program and the Interrelated Library Systems Program were discontinued by the State in 1992.

**Issues and Concerns -** State funding levels are a major concern for the WPL as well as all public libraries in the state. The state, through the Department of State Library Services provided about 6% of operating funds for the WPL (see Table 25). Through the efforts of the State Library Board state funding levels should be increased through in the next ten years. By the year 2000, it is hoped that state funding for libraries will have increased to about 25%. In the last three years, WPL has not received funding other than State Grants-In-Aid and Municipal funds, while state-wide between 18 and 24 percent of the funding for libraries has come from endowments and donations. Warwick's total operating income per capita has been below the state average for the last three years. In 1990 total operating income was 4.6 percent lower than the state average.

Federal monies are available, but only for specific purposes. WPL took advantage of the Data Conversion Fund, a federal program which provides money for the development of automation systems.

**Table 25**
**Warwick Public Library Funding**

| Year | Municipal Funding | State Grant-In-Aid | Other Income | Total Operating |
|---|---|---|---|---|
| 1987 | 786,087 | 51,664 | 0 | 869,751 |
| 1988 | 878,814 | 51,795 | 0 | 930,609 |
| 1989 | 950,787 | 63,0510 | 0 | 1,013,838 |
| **Pontiac Free Library** | | | | |
| 1987 | 1,000 | 2,650 | 32,000 | 36,650 |
| 1988 | 1,000 | 2,726 | 36,000 | 39,726 |
| 1989 | 1,000 | 3,319 | 36,768 | 41,087 |

Source: Rhode Island Department of State Library Service.

The Pontiac Free Library is funded by a private endowment but does receive some state funds. In 1989-1990 it received $2,488 from the DSLS and had in previous years received $1,000 dollars from the City.

**Facilities -** The main facility is a masonry building with 22,350 square feet (gross) floor area not including the second level administrative offices. The Apponaug branch facility is a 1,637 square foot masonry building, Conimicut branch is a 1,410 square foot wood/stucco building and the Norwood branch is a 988 square foot masonry building. The Pontiac Free Library has some approximately 1,000 square feet of space for the collection and all associated functions. The Apponaug and Norwood facilities were built around the turn of the century, and the Conimicut facility was built in 1925.

The renovations made to the WPL in 1977 moved the administrative offices to the second level leaving more space for circulation, technical services, reference and larger program rooms. The Library, which has some 219,923 items, has out grown this facility. Additional seating capacity and shelving space is needed. A new addition is in the initial planning phases, and detailed information regarding the scope of the new addition was not available. There appears to be adequate space to accommodate a sizable addition to the existing structure at the rear of the building without effecting the existing parking scheme. Existing parking at the Library appears to meet current demand. Improvements to the HVAC system are needed to improve the energy efficiency of the facility, and some additional work will be necessary to bring the building into compliance with handicapped accessibility standards.

**Staffing -** The WPL system currently has a full time staff of 51, and has 6 part time staff members. The organizational chart shown in figure 21(see figure on following page), shows the staffing configuration for the WPL system. With the exception of a technician at the Apponaug branch and a shelver in the circulation department of the main library, the system is fully staffed. The minimum standards for library personnel as set by the Rhode Island Department of State Library Services are currently being met. Fourteen staff members are professionals with Master's Degrees in Library Science. Current staffing levels seem to be adequate given the current demand. The staff of the Pontiac Free Library consists of 2 librarians, both of which are not

certified professional librarians.

**Collections/ Circulation** - WPL in 1989, had 219,923 items in its collection this number includes books, serials, government documents, microfilm, audio, videos, magnetic mediums, and others. Eighty-seven percent of the items are in print form. WPL has the third largest collection in the state among public libraries.

WPL's circulation remained at around 500,000 units in 1987 and 1988 and increased to 539,566 in 1989. Only the Providence Public Library has a greater circulation rate. Its per capita circulation is the third highest in the state at 12.2. In the past three years an average of over 36,000 reference transactions were made within the WPL system. The main library with its three branches and the Pontiac free library are open for a total of 175 hours a week. The libraries fill rate, has improved from 71 percent in 1987 to 87 percent in 1989[4]. The average fill rate for the state in 1989 was 84.7 percent. Approximately 387,000 people visited the WPL system in 1989 and close to 12,153 people attended the various programs run by the library in 1989-1990. Table 26shows the number of programs run by the WPL and the attendance within each category of programs. WPL is ranked second in visits and has high program participation.

**Table 26**
**Program Attendance at Warwick Public Library**

| Category | Number of Programs | Attendance |
|---|---|---|
| Pre-school children | 353 | 4,864 |
| School age children | 229 | 7,043 |
| Young adult | 0 | 0 |
| Adult | 39 | 246 |
| | **621** | **12,153** |

Sixty-eight percent of the borrowers in 1989 were adults, the remainder were juveniles. Statewide sixty-one percent of items borrowed, were borrowed by adults.

Pontiac Free Library has a collection of approximately 14,000 items and had a circulation

of 13,583 in 1988-1990.

**Expected Growth -** As Warwick's population continues to grow, greater demands will be placed on the services provided by the library. Gone are the days when the library was considered a source of recreation for housewives and children. Today's library must satisfy the expectations of a population with higher educational level and more leisure time. While Warwick's population will not be growing as rapidly as in the past, the type of people who are moving to the City expect a high level of service.

**Human Services**

The Human Resources Department is divided into several divisions including Administration, Welfare, and Senior Services.

**Administration -** The Administration Division is housed in the Gans facility on Post Road in Apponaug. Administration shares the building with DECD and occupies about 900 sq.ft. of this leased building. The department has a maintenance contract to handle major repairs. Because this division provides no direct services, their staff is small and their space needs are minimal. Growth in the near future is not anticipated. The department staffing consists of a Director who oversees the operation, a substance abuse coordinator, a special projects coordinator and two clerical people. The division is mainly responsible for funneling money to different agencies and privately run programs which provide human services. Some of the programs that are administered include Project Hope & Hope Day Care, Prevention Act - Substance Abuse, Substance Abuse Project, and Coalition to Prevent Child Abuse.

**a. Project Hope**

Project Hope is a program that offers counseling to teenage pregnant women in the school system. The program operates from the Pilgrim High School but serves all the area schools. The staff consists of a Director employed by Child Inc., two professional social workers who do home visits, and part time help from school nurses and a nutritionist. Women can receive guidance and education through a series of workshops including career development, health care, nutrition, and family counseling. Daycare services are offered to women in the school system through the Project Hope Day Care which also operates within Pilgrim High School. The program has the capacity to handle 12 children at current staffing

levels.

Funding for the program comes from a grant which is administered by the Human Resources Department. In fiscal 1989-1990 Project Hope received $75,000 in grant monies. Project Hope Day Care received no grant money in 1989-1990.

**b. Substance Abuse**

The Substance Abuse program receives grant money from the Bramley Act and from the Division of Substance Abuse. The Substance Abuse Coordinator develops activities for substance abuse prevention and counseling, and channels resources to other agencies which are charged with fighting substance abuse. In fiscal year 1989-1990 the program had funding of $106,126.

The Division through its special projects coordinator provides funding and support for the City's two homeless shelters, organizes the holiday food drives, blood drives, and coordinated the City's airport relocation efforts. The Division coordinates its efforts with those of the Welfare Division to ensure that the underprivileged of the City are referred to the proper human service agencies for assistance. Table 27 shows the Administration Division's budget history.

**Table 27**

**Administration Division Budget History**

| Year | Actual Expenditure | Real Dollars 1989 | % Change in Real Dollars |
|---|---|---|---|
| 1984-85 | $459,569 | $561,259 | |
| 1985-86 | $460,095 | $545,832 | -3% |
| 1986-87 | $505,331 | $584,929 | 7% |
| 1987-88 | $510,571 | $566,030 | -3% |
| 1988-89 | $440,958 | $465,576 | -18% |
| 1989-90 | $765,352 | | 74% |
| 1990-91 | $804,670 | | 5% |

Note:...Figures for 1990-1991 are from the General and Enterprise Fund Budgets for 1990-1991.

**c. Welfare Department**

The City is required to provide a Director for this department, and a building to house the operations. The social workers, eligibility councilors, and clerks, who staff the Department, are all state employees. The City rents 10,000 square feet of space in a building at 100 Meadow Street in the Apponaug area for the operations of the Welfare Department.

The Welfare Department is charged with helping underprivileged people in the City. Money and other forms of assistance are provided to people who are below the poverty level through the General Public Assistance program, Aid to Families with Dependent Children (AFDC), a medical assistance program and Supplemental Social Security.

The staff, which averages over 100 walk-in calls a day, has been cut from 42 to 28. Eligibility technicians have to perform duties normally handled by social workers because their are only two professional social workers assigned to the City. In the last four months of 1990, there was a drastic increase (25%) in the number of people seeking public assistance. The down-turn in the economy is expected to continue, and possibly worsen in 1991 thus increasing the demand for public assistance. The State is experiencing its own fiscal crisis and is not likely to hire additional

personnel or provide additional funding for the already overtaxed public assistance programs.

The City may have to increase its funding of the Welfare Department in order to properly staff and support this vital service. Table 28 shows the Welfare Department's budget history.

**Table 28**
**Welfare Department Budget History**

| Year | Actual Expenditure | Real Dollars 1989 | % Change in Real Dollars |
|---|---|---|---|
| 1984-85 | $75,051 | $91,658 | |
| 1985-86 | $70,409 | $83,529 | -9% |
| 1986-87 | $103,507 | $119,811 | 43% |
| 1987-88 | $48,036 | $80,634 | -33% |
| 1988-89 | $72,734 | $97,396 | 21% |
| 1989-90 | $92,246 | $92,246 | 27% |
| 1990-91 | $94,565 | | 3% |

Note:...Figures for 1990-1991 are from the General and Enterprise Fund Budgets for 1990-1991.

**d. Senior Centers**

The City owns and operates three senior centers JONAH, Buttonwoods and Pilgrim (see Figure 22 on following page for locations).

**Buttonwoods Center** - The Buttonwoods Center offers a variety of programs and services such as health, nutrition, leadership, recreation, education and other supportive services. Over 1,400 seniors utilized the Center in 1987 on a regular basis as compared to 558 in 1985, and 679 in 1986. This tremendous growth from 1986 to 1987 is reflected in an increase in participation at the meal site, in classroom activities and in specialized programs.

The meal site has seen a 10% increase in attendance. The average daily attendance and total meals served as of July 31, 1987, were 83 persons and 11,000 meals as compared to 77

persons and 18,928 meals in 1986 and 67 people and 16,511 meals in 1985. The 1987 projection for meals to be served was 21,000.

Health services increased in 1987 and there was a 30% increase in class attendance. Five new classes were added including line dancing, tap dancing, exercise, needlepoint, and beginner's knit and crochet. All of these have been very well received.

The Center also offers informational workshops in several areas such as legal, taxes, health, crime safety and medications. The demand for all these services continues to increase. With the increased growth some problems have developed.[5]

The Buttonwoods facility is currently closed for renovations and is scheduled to reopen in the fall of 1991. The renovations call for the creation of additional space totaling 6,816 square feet. The creation of lobby/ lounge area and the expansion of a multipurpose room account for more than half of the proposed expansion. The total project cost is estimated to be $1,000,000 including additions, site work, new equipment and furnishings, engineering and land acquisition.

The additions to this facility came as a response to a report developed by the Warwick Senior Services and Buildings Task Force in 1987. This report showed the Buttonwoods facility to be at capacity and unable to handle the expected growth in the senior population in the coming years.

The renovated facility will be able to serve meals to 200-250 seniors daily and will have space for expanded activities.

**J.L. Carrolo Community and Senior Center**- The Joseph L. Carrolo Community and Senior Center opened in September of 1981 as a neighborhood community center under J.O.N.A.H., Inc. The facility has the capacity to serve meals to 135 people and recent renovations to the building have added multi-use capabilities. The building was donated to St. Rita's Church and the Oakland Beach Congregational Church by Joseph Carrolo and his daughter Alice Round. The City maintains a fifty-year lease with a ten-year sublease to J.O.N.A.H., Inc.

The senior program fell under the City of Warwick's Department of Human Services in April of 1983. Since that time, the City has

maintained fiscal and staff management of the center and has coordinated neighborhood supervision of the building through J.O.N.A.H., Inc.

The senior program has experienced a steady growth in participation of approximately 30% since 1981 with approximately 85% of the participants being of low income. The greatest bulk, 39%, of the population served by the Center resides in Ward 6. The Center experienced in the first six months to a year, an increase in use of 18%, with an increase of 25% in 1987.

The Carruolo Center provides daily activities for seniors with particular programs for the frail elderly and disabled population. Its most visible program has been the Rehabilitation Program for the disabled adult population.

Due to the fact that the Carruolo Center serves as a community center, various other groups use the building on a regular basis. These groups are J.O.N.A.H., Inc., the Oakland Beach Real Estate Owners Association, Neighborhood Crime Watch, ROPES (emergency food cupboard), Channel One (youth programming), Warwick Players (theater rehearsals), and the Warwick Employees Union (meetings).[6]

Interior renovations to this facility include improvements to the building entrance, the construction of a folding partition in the multipurpose/ dining area, enabling the one large stage area to be used by more than one group at a time; kitchen improvements; and roof repairs. The total cost of these improvements was $60,000.

**Pilgrim Center** - The Pilgrim Center formerly, the Spring Green School has been renovated to accommodate the operation of a full service senior center capable of serving between 200 and 250 seniors. This site was chosen for the new facility because the senior population in this area of the City is large, and continued growth of the senior population is expected. The facility located on the corner of Shippen Avenue and Balsam Street is approximately 16,000 square feet in area. The new addition accounted for 12,800 square feet of this space. The total cost of the renovation was approximately $2,000,000.

The facility's kitchen was designed to handle the preparation 800 meals a day, and serve as the full

service kitchen for Buttonwoods and JONAH. Expanded programs such as woodworking/ ceramics and other arts and crafts are provided at the Pilgrim site.

The Senior Services Division operates a senior transportation program which provides transport for residents over 55 from the home to the three senior centers, the Warwick Welfare Office, McDermott pool, and for bi-weekly shopping. Table 29 shows the budget history for the Senior Services Division.

**Table 30**
**Senior Centers Budget History**

| Year | Actual Expenditure | Real Dollars 1989 | % Change in Real Dollars |
|---|---|---|---|
| 1984-85 | $56,113 | $68,529 | |
| 1985-86 | $54,388 | $64,523 | -6% |
| 1986-87 | $65,322 | $75,611 | 17% |
| 1987-88 | $94,235 | $104,471 | 38% |
| 1988-89 | $248,601 | $262,480 | 164% |
| 1989-90 | $180,665 | | -27% |
| 1990-91 | $247,108 | | |

Note:...Figures for 1990-1991 are from the General and Enterprise Fund Budgets for 1990-1991.

**Recommendations**

1.....Seek new funding sources for programs which have lost State and Federal funding.

2.....Develop programs for the disadvantaged which involve grass-root support, and utilize resources within the community.

3.....Continue to increase services for the growing elderly population.

4.....Refine long-range plans for elderly services based on the 1990 census.

5.....Consider augmenting staff of the Welfare Department with more City employees in order to handle the increase in the number of people seeking Public Assistance.

6.....Work towards the consolidation of the various divisions which are housed in isolated facilities.

**Recreation Department**

The Recreation Department operates two major facilities: the Thayer Arena, which houses two skating rinks, and the McDermott pool facility. Both facilities are located on Sandy Lane adjacent to the Public Works facility (see Figure 23 on following page). The Department is also responsible for scheduling programs at the City-owned ballfields, and for maintenance of approximately 700 acres of recreation land and the support facilities associated with these lands.

**Facilities -** The Thayer Arena, a 60,313 square foot ice arena built in the early 1970's, is located at 975 Sandy Lane. The main rink was designed as the game rink with a seating capacity of 1,800. The smaller rink in the rear of the arena was designed as a practice rink and as such, has a smaller seating capacity. The great demand for ice time by the various leagues and programs dictates that both rinks be used for games as well as practice sessions. Area high schools, youth hockey league, figure skating, public skating and old timers league all compete for ice time. To accommodate these different groups the rink is open from 7:00 a.m. to 11:00 p.m. 7 days a week. In recent years the Recreation Department has rented out the arena for events such as baseball card shows, dog shows and car shows. With the exception of a month in the fall the rinks are open year round. The ice is removed and repairs are made to the systems during the month the rink is closed.

The smaller rink in the back of the building needs a new refrigeration system. The new system is estimated to cost between $100,000 and $150,000. An estimated $40,000 in repairs are necessary for the main rink. Repairs to the roof gutters, facade and ceilings are also needed.

The McDermott swimming pool is a 15,600 square foot facility located between the Thayer Arena and the Public Works garage on Sandy Lane. The facility was built in 1975 and, like the Thayer Arena, is being used beyond its design capacity. The pool operates regular programs for the schools and private groups during the week and is available on the weekends for private groups and parties. The women's locker space needs to be enlarged substantially and sauna and exercise rooms are needed.

The Department operates and maintains a number of other facilities throughout the City, these include:

- A bath house at Gortons Pond;
- Clegg Field concession building;
- Asbury Boat House;
- A Snack bar/ maintenance building;
- Gaspee house;
- Conimicut Athletic Club House; and,
- Mickey Stevens restrooms.

**Staffing -** The maintenance staff of the Department, which consists of 9 full time maintenance people and 17 summer workers is responsible for the 700 acres of City-owned property including numerous baseball and soccer fields, beaches, boat ramps, and moorings. The Director of the Department believes that an additional 6 to 8 full time maintenance people are needed before the maintenance program, which the Department has adopted, can be properly implemented. At current staffing levels fields and facilities are not being properly maintained.

The balance of the staff consists of the Director, 2 recreation supervisors, 5 rink/ pool maintenance people and 2 secretaries. Park police are also needed to inhibit the vandalism which plagues many of the parks and recreation areas.

The WRD budget history is shown in Table 31.

**Table 31**

**WRD Budget History**

| Year | Actual Expenditure | Real Dollars 1989 | % Change in Real Dollars |
|---|---|---|---|
| 1984-85 | $1,133,184 | $1,383,927 | |
| 1985-86 | $1,226,986 | $1,455,631 | 5% |
| 1986-87 | $1,315,969 | $1,523,255 | 5% |
| 1987-88 | $1,356,455 | $1,503,794 | -1% |
| 1988-89 | $1,473,682 | $1,555,957 | 3% |
| 1989-90 | $1,205,553 | | -18% |
| 1990-91 | $1,241,123 | | 3% |

Note:...Figures for 1990-1991 are from the General and Enterprise Fund Budgets for 1990-1991.

**Recommendations**

1. Increase maintenance staff to allow for implementation of Maintenance Management Plan.
2. Add park police units to control vandalism at City parks and facilities.
3. Conduct renovations on the Thayer Arena and McDermott Pool.
4. Increase efforts to market Thayer Arena as a special event venue.
5. Continue to seek opportunities for expansion of programs, and for the acquisition of additional passive and active recreation land.

**Office of Economic Development**

The Department of Economic and Community Development was established to assist businesses and industries of the City, and to ultimately strengthen its economic base. The Office of Economic Development is located in the Mayor's office at City Hall on Post Road in Apponaug.

Economic growth in the last two decades and shifts in the City's economic sectors have increased the need for a professionally staffed economic development department. Additionally, the current administration has made economic growth a priority resulting in an expansion of the department's services and programs. These expansions have resulted in a corresponding need for more staff and larger office space. Despite the addition of one new staff member and

relocation to larger offices, a gradual increase of duties and responsibilities will be necessary for most staff members if the many new programs and services offered to the Warwick business community are to be successful.

The Office of Economic Development interacts and coordinates its efforts and activities with other city departments such as the Planning Department, Public Works Department, Human Services, Building Department, and Mayor's Office.

The rapid commercial growth, which Warwick has experienced, has greatly depleted the City's available commercial land. With limited land resources available for new construction, the department's efforts will be primarily focused on the expansion and retention of existing Warwick businesses. Support services and programs will also be continued and expanded to further support the business community.

In the next 5 years the department looks to expand certain programs and services depending on the changing economic conditions and business community needs. The department is currently developing a marketing scheme to promote the City as a tourist destination.

Some of the changes and shifts in the City's economic base along with other realities of Warwick's economic condition listed below have prompted the implementation of programs addressing a wide range of concerns.

? Decrease in the City's manufacturing employment base.

? Significant increase in the retail and service sectors.

? Limited land resources available for commercial/industrial use.

? Increased use of T.F. Green State Airport by both business travelers and tourists.

? The proximity of I-95 and T. F. Green State Airport has directly contributed to the tremendous growth of new businesses along Post Road and Jefferson Boulevard.

? Increased number of tourists visiting our City.

· The number of hotel rooms in Warwick has doubled over the past four years from 659 rooms to 1266 rooms.

·

· The Office of Economic Development has implemented programs and services which are ongoing to serve the business community, e.g., Export Trade Assistance,

Business Retention and Expansion Programs, Job Skills Registry, Job Fairs, Available Space File, Northern Warwick Incentive Zone, business seminars, tourism promotion and activities.

The Department of Economic Development created the Business and Retention Program to focus its attention on assisting those businesses already located in Warwick and to assist them with any particular need(s) they may have. The attempt to attract new businesses to Warwick by this department has diminished in light of the limited land available for commercial/industrial development.

This department has increased its efforts over the past four years to promote Warwick as a tourism destination. Included in this effort is a Communications Plan for Tourism Development, which includes advertising in national tourism publications, special events and direct mailings. Funding for tourism promotion has been accomplished through the recent Statewide hotel tax legislation.

**Recommendations**

1. Develop an industrial and commercial incubator in existing vacant or underutilized industrial mill space. Rehabilitation and start-up costs would utilize rehabilitation tax credits, SBA and CD funding.
2. Develop a job placement program to augment Job Fairs already being held.
3. Continue and expand marketing campaign utilizing a mix of media advertising, direct contacts (i.e. trade shows, trade delegations) to aggressively attract industrial and commercial investment.
4. Develop a "Sisters Cities" program where the City would develop a relationship with a similar sized community in Eastern Europe to foster commercial, industrial and cultural exchanges.
5. Overhaul the Northern Warwick Incentive Loan Program to counteract the problems associated with the present program. The federal employment regulations that are attached to the seed money in this program currently act as a disincentive to applicants.
6. Continue tourist promotion efforts.
7. Increase support of export oriented industries.

**Public Works Department**

Warwick's Public Works Department (DPW) is comprised of 5 divisions, Administration, Highway, Sanitation, Automotive, Building Maintenance and Engineering. The Sewer Authority was previously a division of DPW but has recently become a separate entity. Growth has also brought change in the Department's operations. The Department's operations are located on Sandy Lane (see Figure 24 on

following page), and their responsibilities include the following:

a. maintaining roads, drains, basins, traffic control devices (except traffic signals which is with the Fire Alarm Dept.)., roadside tree removal/ installation, vegetation maintenance, winter sanding, snow plowing, sweeping, rodent control. Street lighting installation and maintenance service is purchased from the utility company.

b. collection and disposal (at the Central Landfill) of residential refuse; collection and transfer of residential recyclable materials (separate from refuse).

c. maintenance and repair of all D.P.W. automotive fleet and equipment including other selected vehicles of the:

- ? Fire Department
- ? Water Department
- ? Recreation Department
- ? Sewer Department
- ? Human Services Department

d. maintenance and operation of all city buildings except school buildings. (grounds maintenance is the responsibility of the Recreation Department).

e. several functions of the engineering needs of the city including archiving of all architectural and engineering drawings and maps of the city, reviewing and inspecting new plat construction and roadway alterations, developing specifications for routine repairs or small scale improvements; project management.

**Table 32**
**Department of Public Works Staffing**

| **Division** | **Regular** | **Part-Time** | **Summer Help** | **Total** |
|---|---|---|---|---|
| Administration | 9 | - | - | 9 |
| Highway | 59 | - | 21 | 80 |
| Sanitation | 40 | 1 | 5 | 46 |
| Automotive | 14 | - | - | 14 |
| Building Maintenance | 14 | 3 | - | 17 |
| Engineering | 6 | - | - | 6 |
| Sewer | 24 | - | 3 | 27.5 |
| Industrial Pretreatment | 3.5 | - | - | 3.5 |
| **Total** | **170** | **4** | **29** | **203** |

The following is a list of objectives that the department is currently addressing:

? .....Expand infrastructure to meet public expectations, and provide for the gradual improvement of existing systems.
? .....Maintain funding levels of the drainage and road improvements programs. Current funding is $1 million dollars a year.
? .....Expand the number of areas served by sidewalks, with priority given to areas near elementary schools, and where moderate vehicular and pedestrian traffic coincide.
? .....Improve enforcement mechanisms, in order to effectively deal with the problem of speeders and other traffic violators.
? .....Improve the roadside maintenance program to address the increasing concern with aesthetics of City roads.

The following is a list of actions and mechanisms which address some of the objectives already listed.

a. revise sub-division regulations to require more durable pavement structure.
b. augment erosion and sedimentation controls to minimize clogging of drainage channels.
c. obtain added staff and development mechanisms to institute regular drainage channel maintenance.
d. consider herbicidal control of roadside weed growth. Avoid over application of herbicide and use the least toxic material that will still produce the desired level of weed control. Use mowing or hand weeding rather than herbicides in environmentally sensitive areas (such as adjacent to wetlands).

**Long term (beyond 3 years)**

a. consider means of raising funds for protection or long term maintenance of roadways such as thru State appropriations (re-instate the State pavement management program) or perhaps an impact fee on utility cuts.
b. build community support for more neighborhood clean-up activities; perhaps operate a tool/equipment supply or lending program in exchange for offered labor; perhaps have adopt-a-spot campaign to have individuals be responsible for adjacent abandoned lots or historical cemeteries.

**Space Needs -** The administrative and engineering offices need to be expanded to house the additional resources necessary to deal effectively with complaints, and to provide for data management, record storage and enhanced administrative control.

The City Yard where most of the City's vehicles are stored is at capacity for storage. For various reasons, several departments including Recreational, Water, Human Services and the Library store their vehicles in the City Yard. There will be increasing demand for vehicle space as DPW and these other departments expand operations.

**Staffing Needs -** The Engineering Division needs to augment its staff. Additional inspectors and

technicians are needed to handle the functions of the engineering needs of the city including archiving of all architectural and engineering drawings and maps of the city; reviewing and inspecting new plat construction and roadway alterations; developing specifications for routine repairs or small scale improvements; and project management.

**Highway Division**

The Highway Division of the Public Works Department is responsible for road resurfacing, road repairs (potholes and street sign repair and replacement ), tree removal and trimming, rodent control, street sweeping and striping, drainage improvements and repairs and snow removal and deicing. The Highway Division employs 80 people, 59 are full-time people the remainder are summer employees. An increase in staffing may be necessary to keep up with the number of improvements that are called for by the City's residents.

**Sanitation Division**

The City Sanitation Department was privatized in 1992 by way of a competitive bid process. As a result, a private contractor (Truk-Away), operates a city-wide solid waste collection program. Trash is collected once a week and is hauled to the Truk-Away transfer station at Jefferson Boulevard and from the transfer station to the Central Landfill in Johnston. The sanitation contract is due to expire in 1997 with a total cost to the City of $5,094,083.

Warwick was one of the first communities to go on-line with a state mandated solid waste recycling program. Mandatory recycling began in December of 1989. Participation in the program has been running at about 80 percent, a fairly high rate compared to other communities in the state. The City's recyclable waste is handled by the same hauler who handles the City's non-recyclable waste. Curb-side pickup of recyclables including glass (all colors), plastic milk bottles, plastic soda bottles, tin and aluminum cans and newspapers is conducted five days a week by the contractor's seven trucks. These materials are transported directly to the recycling facility located at the Johnston landfill. It is estimated that 17 percent of the City's waste normally deposited at the landfill, is now diverted to the recycling facility. Just as is the case with the sanitation contract, the City's recycling contract with Truk-Away expires in 1997. The total cost of the five year recycling program is $2,344,854.

The City currently has a recycling coordinator who is responsible for the program as well as the development of other programs which are designed to more effectively deal with the City's solid waste. As a result, Warwick's recycling program has been extended to the school system along with the City's municipal housing complexes.

Finally, a very successful city-wide composting program was initiated by the City in July of 1993. The compost facility is located behind the Mickey Stevens Sports Complex on Sandy Lane. The composting program, which provides scheduled curbside pickup as well as drop off service, is credited with removing approximately 5,700 tons of yard waste from the waste stream in its first year.

**Finance Department**

The Finance Department is responsible for processing all revenues generated by the City's various activities as well as all debits against existing City accounts. To accomplish its mission, the Department is divided into the following divisions:

Finance: Responsible for maintaining the City's financial books. All purchases of products and/or services made by the City departments must be approved by the Finance Director. Requests for purchase are reviewed by a staff of accountants that determine which budget code will be charged and if sufficient funds exist to cover the proposed expenditure. Finance also conducts internal audits of each department to track revenues and debitures.

Purchasing: Acts as Purchasing Agent for the City. Responsible for issuing requests for proposals, requests for bid, and requests for qualifications as part of the solicitation of products and services from outside vendors. All purchase orders are issued by the Purchasing Agent whose responsibility it is to ensure that products/services purchased by the City conform to relevant bid specifications.

Assessor: Responsible for determining (assessing) the value of all taxable property within the City of Warwick. This value, divided by the current tax rate, provides the basis for tax bills issued for real estate and motor vehicles located within the city or registered with Warwick.

Collector: Issues tax bills based on the assessed value of real property and is responsible for collecting taxes owed to the municipality.

MIS: The Management Information System (MIS) is the division responsible for maintaining the City's computerized property data base. It accomplishes this through operation of a Unisys Mainframe Computer which is connected to all City departments through a network of dumb terminals and PCs running emulation software. All tax bills issued by the Tax Collector are produced by MIS. In addition, MIS provides software and hardware support to the various City departments for both mainframe and PC based office automation. Current initiatives of the division include coordination of 486DX PC purchases by the various city departments and groundwork toward development of an interdepartment automated permit tracking system.

**Department of Planning**

Functioning as the City's "Navigator", the Planning Department plays a central role in determining where the city is and where it would like to be in the future. Its functions are divided between two divisions: Planning and Community Development.

**a. Planning Division**

The Planning Division is responsible for both short and long range planning. Short range planning involves review of building permit, special exception, zoning and subdivision requests to determine if granting a request is in the best interests of the city. Long Range Planning provides the basis for the reviews undertaken as part of planning studies, including the Municipal Comprehensive Plan, that provide a road map for future development within the city. These planning studies look at how the City is meeting the needs of its residents and at what actions should be taken to enable the City to better address those as well as future needs.

To accomplish its mission, the Planning Division employs a staff of seven which is frequently supplemented by student interns who provide basic research support to the full time staff on various initiatives. As part of the City's move toward automation of its activities, the Division has developed a computerized mapping office with full Computer Aided Design (CAD) capability. In addition, the Division, in conjunction with the Rhode Island Geographic Information System (RIGIS) has begun to assemble a multi-faceted geographic

specific database for use in both short and long range planning initiatives.

### b. Community Development Division

Responsible for managing the Community Development Block Grant Program within the City of Warwick. To accomplish its mission, the Division employs a staff of five. The Division is responsible for soliciting grant requests from local agencies and overseeing the expenditure of CD funds on projects selected for funding.

Ongoing in-house CD funded projects managed by the Division include the Home Improvement Program (HIP), the Rental Rehab Program, and various infrastructure improvements in the Villages of Apponaug, Natick, Conimicut and Pontiac. These infrastructure improvements include period street lighting, signage and sidewalks.

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## Footnotes

[1] In the event that the Mayor is unavailable or incapacitated, the President of the City Council would take his/her place on the EO staff. Director of Emergency Management is third in line of succession.

[3] Warwick Public Library Grant-in-aid Annual Report of Regional Library Centers. July 1,1989 - June 30, 1990.

[4] Fill rate is the number requests made for materials that are met, divided by the total number of requests for materials.

[5] Warwick Senior Services and Buildings Task Force Report, 1987.

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